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Volume 200, Number 21 | Domestic $6 per Annum, 25c per Copy Canada $7.04, Foreign $7.56 | MAY 23, 1929 | Published Weekly in Boston at 126 Massachusetts Avenue

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SPINAL ANESTHESIA FATALITIES AND THEIR PREVENTION*

BY L. F. SISE, M.D.†

DURING the period covering approximately the last year, when spinal anesthesia has been enjoying a great wave of popularity, there have occurred in Greater Boston at least eleven deaths which are traceable quite directly to its use. One of these occurred in this clinic. Three further deaths have occurred where spinal anesthesia was probably the cause. Thus fourteen or more deaths from spinal anesthesia have probably taken place in Greater Boston during the past year.

A rough estimate of the number of spinal anesthesias given during this period forces the conclusion that the death rate has been not much better than 1 in 100. This rate seems excessively high.

Estimates of the death rates from the various anesthetics have always varied widely. Miller[1] in 1915, from a review of 35,063 cases in the literature, concluded that the average death rate from spinal anesthesia was 1 in 515. The most recent study is that by Rygh and Bessesen.[2] These authors, from a review of 250,895 cases in the literature, conclude that the average death rate is 1 in 3,345. This is a considerable improvement over Miller's figures. The change is probably due to improvements which have taken place in drugs, equipment, and methods. As further improvements have taken place since the time of many of the cases included in this report, it seems reasonable to conclude that at the present time the death rate should be somewhat better than 1 in 3345.

In the light of these estimates it appears that the death rate in Greater Boston during the past year has indeed been excessively high.

This high mortality, however, is not so surprising when the conditions from which it resulted are understood. Spinal anesthesia is a method which may have considerable danger. This danger is naturally greatest when the anesthetist is inexperienced in the use of the method. While most of the men in Greater Boston have used spinal anesthesia to some extent for years, they have not used it very much for the high anesthesias necessitated by abdominal surgery. During the past year, however, they have used it a good deal for abdominal surgery. This use of the method has therefore been a comparatively new one for them. Such a condition would be apt to show unfavorable results in any field; and this field has proved no exception.

While spinal anesthesia is a method surrounded by dangers, yet if one is both alive to these dangers and thoroughly conversant with them, they can for the most part be avoided. If definite trouble is encountered, treatment is extremely effective. So, although this anesthesia may be surrounded by dangers, yet it can be very effectively safeguarded. The anesthetist should not venture on the use of spinal anesthesia with hazy ideas or indecisive action. If he is to safeguard the anesthesia he should have a very definite, clean-cut plan concerning every aspect which bears on the question of vascular depression. It is with the hope that it may be of service that I should like to present a plan which we have worked out at the Lahey Clinic.

I am responsible for one of the fatal cases occurring last year. This patient was a man of 72 who was given 310 mgm. of novocain for a long, high anesthesia, for a stomach operation. He ran very satisfactorily for about 20 minutes, when his blood pressure dropped rather rapidly and he went into collapse. He was given intravenous salt solution with epinephrine as well as artificial respiration with oxygen. Our efforts, however, were too tardy and too slow. He was resuscitated, and lived for two days, during which time he maintained his blood pressure and respiration satisfactorily without further stimulation. But apparently the delicate nerve cells of the brain had been injured beyond repair, for he never regained consciousness, but lapsed into coma, and finally died.

We have done a total of 950 spinal anesthesias, so our mortality is now 1 in 950.

From experience with this one fatal case of ours, from a study of the fatal cases occurring about Boston in the hands of other men in the last year, and from experience with a number of cases showing varying degrees of vascular depression our plan has been evolved. The plan is working well in daily use. It has stood the test of several cases who appeared about to collapse. All, however, have been safely checked, and without resort to emergency measures. All other cases have run so as to cause no concern.

The plan stresses particularly two points: prophylaxis and adequate preparation for extreme emergency.

*From The Lahey Clinic, Boston, Mass.

†For record and address of author see "This Week's Issue," page 1113.

THE PLAN

A. Prophylaxis.

1. *Selection of cases.* Spinal anesthesia is not safe for very poor risks. Of the 11 fatal cases, 6 were poor risks, and one was a very poor risk. This last case was distinctly unsuitable for spinal anesthesia.

The indications are relative rather than absolute. In a given patient a low anesthesia might be quite safe, while a high one might be very dangerous. In general, this anesthesia is unsuitable for patients whose bodily vigor is very low from any cause, whether it be shock, hemorrhage, sepsis, long illness, old age, or other causes. Such cases would be safer if done under some other form of regional anesthesia of more limited extent.

2. *Fluids.* It has been our clinical experience that fluids given before the anesthesia add greatly to its safety. In one of the eleven fatal cases (exclusive of our one case) dehydration was noted in the physical examination, while in two others a history of prolonged vomiting strongly suggested the probability of this condition.

All cases about whom there is any doubt should receive saline intravenously or by hypodermoclysis, timing the last administration to come just before the anesthesia. We commonly use at this time 1500 c.c. saline and 50 gms. glucose by hypodermoclysis. Patients entering the anesthesia with their vascular system well filled with fluid are much more resistant to a drop in blood pressure and respond much more readily to treatment than those not so prepared. I believe this to be a very effective prophylactic.

3. *Ephedrine.* This drug is so effective as a prophylactic that its use is now almost universal. There is not complete agreement, however, on its method of use and dosage. We believe that, while it is an excellent prophylactic, it is inferior to epinephrine as a remedy. This point will be discussed in speaking of epinephrine.

The dose should be varied according to the height and length of the anesthesia and according to the position of the patient. For an anesthesia below the abdomen very little is needed. For an abdominal operation in Trendelenburg position 50 mgm. is usually enough. For one where the patient is level, however, the dose should be 75 to 100 mgm.

Caution must be used about over-dosage, especially if there is any suspicion of angina. It does not seem wise or necessary to exceed 100 mgm. in any case. Large doses put a heavy load on the heart and, in the presence of weakness there, may cause failure. In two of the fatal cases here discussed death was, from what we can learn from the records, apparently precipitated by large doses of ephedrine with resulting heart failure. These patients are said each to have received approximately 150 mgm. ephedrine in divided doses. They are said to have left the operating room with blood pressure well up, being in one case 130/85 and in the other 160/60. But the pulse was small and there was auricular fibrillation and cyanosis. They continued in this condition till their death about twelve hours later. These patients were both very poor risks, but ephedrine appears to have been the deciding factor in their deaths. Therefore caution must be used when employing large doses in poor risks. This is especially true if the patient is to be in Trendelenburg position. Here less ephedrine is needed and less is tolerated.

4. *Placing the anesthesia.* In four of the eleven fatal cases, death was apparently due to a dose of the anesthetic which rose in the spine and became placed very high, probably in the medulla. In every case there was almost immediate collapse, followed closely by death in all but one case, this case being kept alive for about three-quarters of an hour by artificial respiration and epinephrine. This patient was unfortunately quite a poor risk; otherwise it is conceivable that she might have been saved.

Spinocain was used in these four cases, and in three out of the four the injection was made with the patient sitting up. This solution is lighter than the spinal fluid, and therefore tends to rise to the highest point. Pitkin, its originator, estimates that it takes from 9 to 11 seconds to rise from the lumbar to the cervical region. In each of these cases the anesthetist knew the physical properties of Spinocain, and, to keep it from rising too high, relied on putting the patient down the instant the needle was withdrawn. But in each case the injection was apparently made somewhat slowly, and it is probable that the first part of the injection had already risen too high by the time the last part was given and the patient put down.

While, if an appropriate technic is used, light solutions undoubtedly can be and in fact are being given with the patient sitting up, yet this seems an unnecessary risk to take. The anesthesia can perfectly well be given with the patient lying on the side. With a light solution it should therefore be given in this position. If it is given with the patient sitting up, and death should result, a physician would have great difficulty in justifying his procedure.

5. *Trendelenburg Position.* The vasomotor blocking of spinal anesthesia causes vascular relaxation. The blood therefore tends to gravitate to the most dependent portion of the body. While the blood is not needed at all in the feet and legs, it is absolutely essential in the vital nerve centers and heart. In the level position these parts may become quite anemic, but in the Trendelenburg position they are supplied with blood by means of gravity. Labat has consistently stressed this point. The position is one of comparative safety. Operations therefore should always be done in this position as far as possible without interfering with the ease of operating.

A corollary of this is that it is unwise to use a heavy solution for abdominal operations because, if the Trendelenburg position is assumed,

such a solution would be apt to gravitate towards the vital nerve centers in the medulla. Our fatal case was done with a heavy solution of glucose; and the level position of the body with head raised, because of the use of this solution, was probably one of the important factors leading to his death.

6. *Early Treatment.* Early treatment of vascular depression is one of the best of prophylactics against further depression and possible collapse. Before a certain point is reached in the progress of the depression, the blood pressure may be easily controlled by means of subcutaneous medication, but after this point is passed, the circulation in the tissues is too slow to pick up medication readily. The patient is therefore out of control by this simple method, and intravenous medication becomes necessary.

The point at which treatment should be started varies. In general it should be earlier with a rapid drop in pressure than with a slow sag. We have taken two-thirds of the normal preoperative level of blood pressure as the point at or above which we would like to keep the blood pressure when the patient is in the level position. In the Trendelenburg position this point may be somewhat lower.

It is important that treatment should not be delayed till the patient is in poor condition, but that it should be started while he is still in good condition and therefore able to respond to simple measures. Such early treatment would almost undoubtedly have saved our fatal case, and probably would have saved three others of the above series.

7. *Careful watching.* In order to start early treatment, it is necessary to watch the patient so carefully that early symptoms of trouble are detected. In one of the above cases these early symptoms are said to have gone unobserved for a very definite period of time. In a majority of the cases the urgency of the situation does not appear to have been realized sufficiently early. This is of the greatest importance, as a few minutes' time here makes a very great difference in the effectiveness of treatment.

The fatal cases indicate that the most rapid and severe collapse occurs soon after the induction and that this is therefore the time to watch most carefully. They also indicate that rapid collapse may occur any time inside of the first half hour.

We believe from watching cases that not only the blood pressure and pulse should be watched carefully, but also the respiration and the color for cyanosis. These patients are unusually susceptible to anoxemia. They cannot make a normal response to it by speeding up the circulation, and therefore fall easy victims. A vicious circle is formed between the respiration and circulation, with each depressing the other with cumulative and accelerating effect. This interaction of respiratory and circulatory depression was probably a considerable factor in four of the deaths of the series. It is therefore quite important to watch carefully the respiration as well as the circulation.

8. *Care with general anesthesia.* When a general anesthesia is superimposed upon a spinal anesthesia, circulation and respiration may be greatly depressed by too rapid an induction. This is especially true if anoxemia is present, because of the susceptibility of these patients to this condition. Great care should therefore be used and the induction should be extremely slow and careful. One of the deaths in this series was said to have occurred shortly after ethylene was started on top of a spinal anesthesia which was still in full swing, and therefore was probably due to the depression thus caused.

B. Therapeusis.

1. *Trendelenburg position.* The same reasons which make the Trendelenburg position effective as a prophylactic make it also effective as a remedy. The assumption of this position is usually the simplest and quickest thing which can be done to benefit the patient. For this reason it is a good plan to have shoulder pieces always in place so that the patient can at any time be thrown into this position at a moment's notice.

2. *Epinephrine.* This drug is the most important remedy which we have for vascular depression. Like ephedrine it stimulates the sympathetic nervous system peripherally, and is therefore still effective in the presence of spinal block. It is a stimulant of tremendous power. As a remedy it is preferable to ephedrine because its action is quicker and more powerful, but at the same time less prolonged. The difficulty with ephedrine as a remedy is that if the blood pressure is much lowered its action is so slow and weak that, in order for it to be effective, too large a dose has to be given. As the circulation improves, this large dose is picked up and the resulting action is too great. As the action is also quite prolonged, a strain on the heart results which may produce failure if there is heart weakness. In two of the above fatal cases heart failure and death apparently resulted in precisely this way. Somewhat similar trouble may be experienced with epinephrine, but its action, being quicker, is not so apt to become too great, and being shorter, does not place such a prolonged strain on the heart.

It is somewhat difficult to get just the right amount of action from epinephrine, to have the action sufficiently quick and powerful but not excessive. Satisfactory results are easiest to get when it is given early, when there is good circulation in the tissues, so that the drug is picked up quickly from them. Under these circumstances, one-fourth cubic cm. of the 1 to 1000 solution is quite effective. If a somewhat more rapid action is desired, part of this amount may be given intramuscularly. The action of this intramuscular portion is very rapid and powerful. While it is correspondingly short, yet this fact is compensated for by the more prolonged,

though weaker, action of the subcutaneous portion. The effect of this medication may be made quicker and more powerful by strong massage at the point of injection.

All these maneuvers are very easy to carry out without disturbing the surgeon or operation in any way. It is therefore practical to use them frequently and while the patient is in perfectly good condition.

If the blood pressure falls very low, intravenous medication becomes necessary in order to get a sufficiently quick response. Except in extreme emergency the amount of epinephrine given should be quite small, one or two tenths of a cu. cm., as its effect given in this way is tremendously powerful.

3. *Salt Solution.* A very good way to give epinephrine intravenously is to give it in salt solution. The epinephrine should be injected through the rubber tubing of the infusion apparatus near the needle by means of a hypodermic syringe and needle. In this way small amounts of epinephrine may be added to the salt solution from time to time as indicated by the condition of the patient. The fluid of the salt solution is especially valuable where much blood has been lost in the course of the operation.

4. *Equipment ready.* One never can be sure in any case, especially with a high anesthesia, that there will not be vasomotor collapse. If this occurs, speed is of the greatest importance. A moment here makes all the difference between life and death. Seven minutes is probably the outside limit of time that the delicate nerve cells in the vital centers can go without effective circulation. This was shown strikingly in our case. Too great delay was also probably a considerable factor in at least four of the other fatal cases.

Most well equipped hospitals have saline infusion apparatus sterilized and ready for use. In the event of an emergency, however, it takes rather long to get this apparatus functioning and fluid actually running into the vein. In addition to this apparatus therefore, we have two syringes with appropriate needles sterilized and ready for use. The first one is for the anesthetist to use as described above. He may well employ the syringe and needle which have already been used for local infiltration of the skin prior to spinal puncture. The other syringe and needles form part of the surgical kit, and are on the instrument table. The needles are of hypodermic and cardiac size. With them is a sterile ampule of epinephrine.

A gas machine should also be ready to the hand of the anesthetist for the emergency administration of oxygen if needed. Carbon dioxide may be of great value at this time. The machine will also be useful if a general anesthesia has to be given, first, for the nervous condition of the patient, and second, if the anesthesia wears off toward the end of a long operation.

5. *An agreed plan of action.* In case of an emergency, minutes are of greatest value. It is no time then to decide who is to do what. There should be a definite plan of action already agreed upon. Our plan is as follows:

If a grave emergency suddenly arises, the anesthetist gives the alarm and immediately tips the patient into high Trendelenburg position, and gives, as indicated, oxygen, carbon dioxide, or artificial respiration. He maintains an open airway, watches the condition of the patient, and reports on progress. When he gives the alarm the operating nurse immediately fills the syringe on the instrument table with epinephrine and hands it to the surgeon; and the surgeon injects some epinephrine into a vein in the operative field. All these various actions can easily be completed within one minute from the time the alarm is first given. In this way a prompt and vigorous attack is made on the circulation and respiration at the same time, which should be effective in checking any but the most drastic collapse. This gives opportunity for starting saline infusion if it is thought necessary.

If the heart has stopped beating, intravenous medication would be futile. Under these circumstances the surgeon should inject epinephrine into the heart, starting with a few tenths of a cu. cm., and follow this with cardiac massage if the heart does not promptly start beating.

Spinal anesthesia is a very valuable method indeed, but it is dangerous unless it is used with great care. It should therefore be properly safeguarded, or this valuable method will be discredited. A death rate such as we have had in Boston this past year cannot continue. It is therefore extremely important that all of us who are using spinal anesthesia should approach it if not with the identical plan here outlined, at least with some very definite, well thought out, and carefully prepared plan which shall make the anesthesia safe.

SUMMARY. The death rate of Spinal Anesthesia in Greater Boston in the last year has been very high, probably not far from one in one hundred. At the Lahey Clinic our total mortality up to the present has been one in 950. Both these figures can probably be greatly improved. A plan for safety is presented in detail which stresses especially prophylaxis and preparedness.

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N. E. BRANCH OF AMERICAN UROLOGICAL ASSOCIATION

CERTAIN ADVANTAGES OF THE TWO-STAGE SUPRAPUBIC PROSTATECTOMY*

BY ARTHUR L. CHUTE, M.D., F.A.C.S.†

THOUGH I have been asked to set forth the technique which I employ in carrying out the two-stage suprapubic prostatectomy, and the advantages that I believe this procedure has, I do not wish anyone to draw the conclusion that this is the only type of operation which I approve or employ for the removal of an obstructing prostate. While I do believe this is the best routine operation that most of us can employ in the greater number of cases of prostatic obstruction, it has its limitations. In the first place let me say, that I believe all small fibrous prostates, most all malignant prostates, and a large proportion of hypertrophic prostates in very fat men are best removed through the perineal route. Though this limits suprapubic operations, either the one-stage or two-stage operation, to benign, hypertrophic prostates in men with not too thick abdominal walls, yet this is the class in which by far the greatest number of obstructing prostates fall. In this class I believe the two-stage operation is the operation of choice in the greater number of cases; I will not say all cases, as some undoubtedly can be done in one stage with a sufficient degree of safety.

Before discussing its advantages I will describe the operation as I do it. The routine which I employ for the two-stage suprapubic prostatectomy at the present time is much the same as I have employed for a number of years, with this one exception, that I have, in most cases, for the last year or so, added to it a double vasotomy carried out either at the time of the cystostomy or some time before it, if for any reason I employ a period of preliminary catheter drainage in a given case. This vasotomy is done by open incision on either side. The cord is identified on the anterior or anterior-lateral surface of the scrotum and held between the thumb and forefinger; a little novocain is injected into the skin and a curved needle passed under the cord in such a way as to hold it in place just under the skin; the cord is exposed by incision, separated from the surrounding tissue, a double catgut ligature passed under it and tied above and below. The cord is cut between these ligatures, and oozing stopped, the deep fascia closed with fine catgut and then the skin in another layer. The ends of the skin sutures are left long and a dressing of gauze as big as a pencil is tied over the suture line with these ends.

For the suprapubic incision the skin and subcutaneous tissues are infiltrated with a ½% solution of novocain from a point a little below the umbilicus to the pubes. The whole thickness of the abdominal wall is infiltrated down to the retroperitoneal layer. A median incision is made about four inches long but its length has to depend somewhat on the thickness of the abdominal wall; the fascia is incised its full length and the muscle beneath it down to the retroperitoneal layer. If the bladder had been emptied before operation it should now be filled by a catheter which was put in place before operation. The separation of the retroperitoneal fat will allow one to recognize the rather pale, perpendicular fibers of the bladder muscle; tortuous veins are often present on the surface of the bladder. The bladder wall is now infiltrated with weak novocain and a small curved needle with heavy linen is carried through the bladder wall, parallel with the muscular fibers, on either side of the median line. These sutures are left long and are used to steady the bladder when one opens it; the bladder incision, which is about an inch long, should be in the direction of the fibers and care should be taken that the peritoneal fold is well retracted above. A forefinger is passed through the incision in the bladder and unless I find a mass of prostatic tissue immediately under my finger I insert a large, straight suprapubic tube, close the incision above the tube in layers, put in adequate drainage for the retroperitoneal space, usually consisting of two small rubber wicks, one above and one below the suprapubic tube. If the exploring finger finds the prostatic mass just beneath the incision in the bladder wall, I use instead of a straight tube a right angled suprapubic tube whose bladder end is like a self-retaining catheter of the "mushroom" or "wing" type. The guide sutures used to steady the bladder when incising it and introducing the tube are left in place, the ends simply lying on the abdominal wall. In the rare instances in which a bladder fills with clot and has to be emptied, these sutures are of use in showing the way to the opening in the bladder wall. This comprises the first stage of the operation.

At a time varying from 10 days to many weeks or even months, depending for the most part upon the patient's renal condition, as shown by the excretion and nitrogen retention tests and his cardiac condition as shown by his pulse and blood pressure and in the puzzling cases by the cardiologist's advice, I carry out the second stage of the operation; the enucleation of the hypertrophied gland.

*Read at meeting of the New England Branch of the American Urological Association, February 5, 1929.

†For record and address of author see "This Week's Issue," page 1113.

For this stage I use spinal anesthesia in the vast majority of cases, believing that it is the safest anesthesia that we have for this purpose. Doubtless due to my familiarity with it, I prefer the older novocain-suprarenin solution to the newer solutions, using from 1 to 2 cc of a 5% solution; in most instances without a preliminary injection of ephederin. The spinal injection is ordinarily made in the third or fourth lumbar interspace. Occasionally I inject ½% novocain solution about the suprapubic opening through which I am to remove the prostate, this, of course, after the suprapubic tube has been removed, the bladder irrigated through the suprapubic opening and the skin prepared. The suprapubic opening is then dilated until it will take my forefinger easily and if it is possible to do it without injuring the tissues, the incision is dilated until it will take two fingers. Then with my right forefinger in the rectum to lift and steady the prostate I proceed with my left forefinger to carry out its enucleation. I break through, by preference at the anterior commissure, and get into the layer between the hypertrophied tissue and the laminated prostatic tissue that forms the surgical capsule of the hypertrophied gland. One can usually carry out the separation of the hypertrophied masses with a reasonable degree of ease, first on one side, then on the other, though it may be hard to loosen the anterior portion. The prostate may be enucleated as one compact mass including the prostatic urethra but more often it will be removed in two or more pieces. When it is not possible to get into the proper layer from the anterior commissure, one may be able to do this posteriorly just at the junction of the bladder and prostatic urethra, or if there is an irregular lobe, one may break through the mucosa at this point, or laterally; anywhere in fact that one can get through the mucosa and insert his finger between the hypertrophied masses of the prostate and the laminated layers of prostatic tissue that constitute its surgical capsule. When the prostatic mass is once loose in the bladder, it is, as a rule, easy to remove with stone forceps; at times, however, these masses may be very elusive.

Having removed the prostate I pass a soft rubber catheter, varying from 18-22 F., from the meatus into the bladder, fish the tip out the suprapubic opening, pass a suture through its end and pull the catheter back until its eye is just within the bladder. The suture is then sewed through one edge of the suprapubic incision and tied in a bow knot so that the adjustment of the catheter may be changed easily. The bladder outlet then is packed lightly temporarily and if the bleeding ceases the gauze is removed and a suprapubic tube put in position and held by a stitch through one edge of the incision. If, however, the bleeding does not stop after a reasonable time, I fish up the end of the catheter in the bladder and sew to it the tube of a hemostatic bag which I bring out the urethra by pulling my catheter back; the bag is then filled and held in position for some hours. At other times instead of using a hemostatic bag I pack the bladder outlet tightly with gauze, leaving the catheter in the urethra. I believe this latter is the surest way to control a really severe hemorrhage, but as the removal of the gauze is painful, and its use more often followed by an infection of the cavity I prefer to use a hemostatic bag when that is efficient. This represents the procedure that I ordinarily employ in carrying out the two-stage prostatectomy.

This operation can be considered as entering into competition only with the one stage suprapubic prostatectomy. In this competition I believe there are three definite advantages that the two-stage operation possesses, especially in the case of the prostatic who is a "poor risk." Its first and chief advantage is the one that it affords in the renal preparation of the patient; its second is the diminution of the hemorrhage encountered at the time of enucleating the prostate and its third advantage is minimizing the sepsis and sloughing of the suprapubic wound and perivesical tissues. I have said that I thought its chief advantage lay in the better renal preparation of the patient. Those of us who have been privileged to follow the development of prostatectomy in the past 25 years remember the cases we formerly operated upon, sometimes with a moderate amount of clear residual, at other times with bladders overdistended with pale, uninfected urine. Usually the operation was done under ether. Often these patients seemed very well the day after operation, but at the end of from 24 to 48 hours nausea appeared, then vomiting, hiccoughing, and distention, followed by a gradual slipping down hill and a fatal outcome at the end of from five to seven days; "shock", "cardiac failure" and "hemorrhage" were blamed for this. Then came the slow recognition that this was really the result of a toxemia due to interference with the renal function, sometimes to be sure, combined with more or less infection, but at any rate a condition which could, in a large measure, be prevented by proper preoperative care of the kidneys; we had it very forcibly impressed upon us that the essential part of this preoperative care was preliminary bladder drainage which allowed the kidneys to adjust themselves to working without the backpressure to which they had long been accustomed; that this should be carried out before one added the irritation of ether together with the extra trauma of the removal of the prostate.

The importance of adjusting kidneys that have been functionally embarrassed by working against back pressure, to working when this has been removed, is I think accepted by all. Opinion is, however, not in agreement as to the best way to do this. Some think it can be done best by the use of an inlying catheter; others that a cystostomy is the safest way.

I quite agree that under favorable conditions we may have an ideal catheter drainage that will secure all the advantages in the way of drainage that come from a preliminary cystostomy

but I further contend that catheter drainage is not always ideal. First there is the patient with complete retention whose bladder is full of clotted blood and who cannot be drained by catheter. Then there is the patient who perhaps has an oversensitive bladder or perhaps has little self control but at any rate who cannot be kept from straining unless he is given much more sedative than I believe is good for men in this condition. Sometimes the patient's straining causes bleeding that interferes with the working of his catheter; at other times he forces his catheter out and produces an intermittence of drainage. Besides these there is the patient who is slightly flighty at night and who insists on pulling out his catheter. To these we may add the patient whose urine is so turbid that his catheter constantly becomes blocked causing intermittent drainage. Drainage that is intermittent is, I believe, especially dangerous during the period when one is trying to get kidneys to function normally that have been suffering from backpressure. This is for the reason that kidneys that have suffered from the effects of backpressure are especially susceptible to infection from an infected bladder, and I believe that we must assume any bladder which we keep on constant drainage, whether by catheter or suprapubic tube, will become infected, often very mildly so but none the less infected. I also believe that there is a much greater chance of backing up and the consequent extension of the bladder infection to the kidneys where a catheter is used for drainage than when a large suprapubic tube is employed, because of the intermittence that more often attends drainage by catheter. There can be no question that there is a certain amount, often a considerable amount, of shock attending cystostomy in frail old men with overdistended bladders. For this reason I often use preliminary catheter drainage for a time before doing a cystostomy with excellent results, but if they have an uninfected bladder I try to do the cystostomy as soon as I dare. The preliminary drainage afforded by the two stage operation also serves other purposes than the main one of allowing kidneys that have been embarrassed by backpressure to readjust themselves to functioning properly in its absence. One of these is that of lessening the congestion of the prostate and bladder outlet and in this way diminishing the tendency to bleed at the time the prostate is enucleated. I do not consider this a very great advantage but I believe it is a distinct help. For while I do not think that at the present time one often sees a hemorrhage following prostatectomy which one really wonders if he is going to be able to control, yet I for one do not like to see any bleeding and am thankful for anything that tends to diminish it. This in spite of the fact that I feel practically confident I can control any hemorrhage that follows the enucleation of a prostate either by the use of a hemostatic bag or by packing the bladder outlet, or by the combined use of the bag and packing. The third advantage that comes from a preliminary cystostomy, especially if the bladder is badly infected, is that of limiting the sepsis of the abdominal wound which may extend to the prevesical and perivesical spaces. I believe it is an advantage when one is opening and draining an infected bladder and we have to meet an infected bladder in a considerable proportion of our obstructing prostates, to expose as little of the perivesical space as possible to contamination by the infected urine. I am convinced that there is less probability of an extensive sepsis when one simply exposes a clean-cut suprapubic incision to infected urine than when one so exposes an incision that has been more or less traumatized by the maneuvres necessary to the enucleation of a prostate; that not infrequently the sloughing of the fascia and suprapubic sepsis in such cases does away with any supposed advantage of the one stage operation as regards rapidity of convalescence.

I will agree that with the better knowledge of a patient's renal condition which our tests of excretion and nitrogen retention give us, and with our more efficient ways of controlling hemorrhage, the overwhelming advantage that the two stage prostatectomy has enjoyed over the one stage operation, so far as safety is concerned, is somewhat lessened. I still believe, however, that the two stage suprapubic prostatectomy, though one may speak of it as a "blind, unsurgical" procedure has a great field of usefulness in the treatment of the benign hypertrophied prostate.

PROSTATECTOMY*

BY WILLIAM C. QUINBY, M.D., F.A.C.S.†

IN considering the operation of prostatectomy it is of importance first to note that though this operation has become a highly specialized one, to it the same fundamental principles apply as are applicable to surgical operations in general; influenced by such factors as are introduced by deviations from the normal of the patient's general condition, on the one hand, and by special anatomical and pathological factors at the site of operation, on the other.

The general surgical principles which it is important to note are the following:

1. Before operation, as well as after, normal action of the heart, lungs, kidneys and bowel

*Read at the meeting of the New England Branch of the American Urological Association, February 5, 1929.
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†For record and address of author see "This Week's Issue," page 1113.

should be aided in whatever way possible, according to the conditions found in each individual case.

2. Anesthesia should be adequate and safe, causing as little toxicity as possible.

3. Operation should be performed with as little trauma to tissues as possible.

4. Adequate access to the field of operation should be secured so that the procedure can be controlled by vision as well as by touch.

5. Control of hemorrhage should be efficient.

6. Infection should be avoided or minimized.

7. Having finished the operation, put the parts at rest.

Though these principles are so well established as to make their recital almost hackneyed, I am convinced that on the complete observance of them as a whole, the successful outcome of enucleation of the prostate largely depends. Not to observe any one of them may mean disaster, or at least failure to relieve the patient.

Before operation can be undertaken, continuous drainage of the bladder must be arranged for and this drainage must be efficient. By this measure renal function which has always been interfered with by the chronic obstruction at the neck of the bladder, is given opportunity to become more nearly adequate. There are three ways by which such drainage may be made, either by an inlying urethral catheter, or by an opening of the bladder through a cystotomy wound, or by the insertion of a catheter through a suprapubic puncture of the bladder by a trocar. The advantage of the urethral catheter is that it will keep the bladder empty without the necessity of an operative procedure, and thus the structures in the suprapubic region are not invaded till the actual operation of enucleation takes place. Its disadvantages are that its introduction may be accompanied by a good deal of trauma when unskillfully inserted, giving rise to increase of infection. Also its presence in the urethra always sets up a urethritis for which reason it must be frequently changed. Maintenance of drainage which will be efficient by urethral catheter means constant oversight of the patient by skilled attendants, and I am rather of the opinion that if the patient be not in a hospital where such attention can be had, and this is unfortunately only too often the case especially in our private hospitals, this method of drainage of the bladder will often do more harm than good. The advantage of the preparatory cystotomy procedure is that it forms a relatively easy and highly efficient method of keeping the bladder empty. Through the opening so made a catheter is adjusted which is readily borne, free from involvement of the abnormal structures at the outlet of the bladder. Its establishment means, however, a definite operation which calls forth in the tissues above the pubes the extravasation accompanying healing, thus making a second entrance by this route much more difficult if adequate exposure is to be had. So marked is this change in the normal plasticity of the tissues that the operation of enucleation of the gland will often have to be modified in several undesired respects. The adjustment of a suprapubic catheter by the use of a trocar avoids these objections to a large degree, because the wound of entrance is of relatively insignificant size. The use of the trocar, however, is a rather blind procedure and not without danger. Furthermore, even through those instruments of the largest caliber which it is feasible to use, the size of the catheter which can be employed is at times too small to keep the bladder really empty. Comparing the advantages with the disadvantages, therefore, it is our usual custom to attempt drainage of the bladder by inlying urethral catheter, being ready if this method prove unavailing, to enter the bladder by open operation above the pubes. Introduction of a catheter through a suprapubic trocar wound has been used but a few times. Cases needing gradual decompression of the bladder are seen only occasionally and are usually represented by the individual with a markedly overdistended bladder filled with non-infected urine.

The measures which should be undertaken to improve the action of heart and lungs are several. In the first place the patient should not be kept in bed continuously, but should be urged to be mildly active, at least about the room. In these patients there is frequently found expression of poor function on the part of the myocardium, seen in hypostatic congestion and râles at the bases of the lungs. Also it is not infrequent to find them showing a very considerable degree of emphysema. A recumbent position is distinctly bad for such people. If there be emphysema with a good deal of chronic bronchitis, benefit can often be obtained by overventilation of the lungs, making the patient breathe deeply on several periods each day, or even in extreme cases, if he cannot or will not do this, administering carbon dioxid gas. If there is a cardiac arythmia, this should be controlled by a preliminary course of digitalis. A continuous record of the systolic and diastolic blood pressure, of the phthalein output and of the blood urea or blood urea nitrogen should be kept. Of course fluids should be given in large amounts and in some instances when the patient is unable to take a sufficient amount by mouth, it is wise to give salt solution into a vein daily in amounts up to one or two liters.

The use of the cystoscope in preoperative study of prostatic hypertrophy is, in our opinion, very important and I see no validity in the argument that because the bladder is subsequently to be opened above the pubes, there is no need of preliminary cystoscopic observation; for the information which can be obtained by this procedure far outweighs the few disadvantages or

temporary discomforts so caused. Frequently on the results of this examination will depend the choice of operative approach, whether by perineum or by suprapubic route. At other times stone, diverticulum, or even tumor is found complicating the obstructing prostate. It is important also to know whether the enlargement of the prostate is largely intravesical or subvesical or mostly of the median lobe, and this information can only be acquired by the use of the cystoscope. Therefore, I feel strongly that no operative enucleation of the prostate should be undertaken without previous cystoscopy, and if for any reason I were unable to cystoscope the patient, I would certainly not operate through the perineum, for any complicating condition within the bladder, especially tumor, might thus be overlooked.

A question frequently asked me by students is, "How do you decide when to operate on a patient?" This is a logical question, not always entirely easy to answer. In the first place, renal function, blood pressure and blood nitrogen readings must have become stabilized. I mean by this that the chart which continuously records these factors should have become free from any especial fluctuations. The balance of our judgment depends on our estimation of the patient's general condition, and in this regard, calls for some experience. In the first place the patient should have become rested, as many of them when first seen, are unconsciously tired from loss of sleep and the constant struggles to urinate. The digestive system, very frequently unbalanced, should have become normal. Fever should be absent. The tongue should not be coated, nor the breath foul.

As regards the choice of operation, we have come to the opinion that the removal of the prostate by the suprapubic route, done in one stage, is probably the most ideal procedure when considered from all points of view and when the patient's condition is such as to warrant it. I must again emphasize, however, that this operation depends in large measure on successful preparation before operation by urethral catheter. Our second choice is to remove the prostate by the two-stage operation. The perineal operation is without any doubt followed by smaller demand on the patient's general powers of resistance than are either of the forms of suprapubic approach. Technically, however, it is a more difficult operation and on the whole I find that we have reserved the perineal operation for those patients who are somewhat unfavorable surgical risks for the one-stage operation but not sick enough to demand the two-stage, or for those in whom there is some suspicion that the prostate is the seat of malignant growth.

The type of anesthesia which we have been using most recently is that of the spinal injection of neocaine aided by the use of ephedrin. Until this blood pressure raising substance had been made available I had used spinal anesthesia a few times but had found that the frequent depression of the blood pressure was so alarming and so discomforting for the patient that I was afraid of the method. By the use of ephedrin both before and after the introduction of the neocaine, the blood pressure is never allowed to fall to a marked degree, and therefore the patient goes through the operation without any especial change in his general circulatory balance. If in an occasional case spinal anesthesia is unwise, I feel that the use of a general gas-oxygen anesthesia is the next best form. For the perineal enucleation of the prostate it is just as easy and satisfactory, and probably safer, to use neocaine in the epidural canal rather than in the spinal canal.

The one-stage suprapubic operation is, at present, performed as follows:

The patient is given a preparatory dose of morphia 0.015, atropin 0.0005, and ephedrin 0.050, after which 100 mgms, of neocaine mixed with spinal fluid is slowly introduced between the 2nd and 3rd lumbar vertebrae. The patient is then soon placed in the Trendelenburg position. The bladder is empty or nearly so. A midline incision is then made, going down to the preperitoneal fat. This incision should extend from the actual symphysis up to about one inch below the umbilicus. After placing a retractor just above the symphysis, the cellular tissue in front of the bladder is lifted upward and the anterior wall of the bladder thus easily exposed to vision. This is lifted by two tenaculum forceps and the bladder entered through a small incision. Immediately any excess of fluid is removed by use of a negative pressure tube (sucker). This incision in the bladder is then enlarged both upward and downward throughout the whole anterior aspect of the organ. Downward, the incision should reach only within an inch of the prostate, but upward it may be prolonged as far as necessary after wiping back the reflexion of the peritoneum A self-retaining bladder retractor is gently adjusted and the vault of the bladder held upward by an assistant using a flat retractor with a large curve. Thus adjusted, the whole interior of the bladder is widely open to view and one can thus easily control the enucleation by vision as well as by touch.

If there be any complicating elements present, such as diverticulum, these should now be removed. The smaller variety of diverticulum may be enucleated by invagination, after which it is cut off flush with the mucosa and the opening united with a few stitches. The larger type must be removed after freeing the bladder from the outside, so as to obtain adequate access. In all cases which permit, I feel such removal of diverticula to be an important step in avoiding the presence of residual urine after the patient has recovered from the prostatectomy.

Aided by the support of two fingers of the left hand in the rectum the prostate is immobilized and enucleated by the fingers of the right hand. Following its removal the cavity is tem-

porarily packed with gauze to control bleeding and all resulting tags and shreds of tissue are cut away by the use of scissors and forceps. Whatever bleeding is of importance will usually be found to come from vessels just at the apex of the trigone where the prostate has been torn away from the bladder neck. By the use of the sucker such bleeding points are made evident and grasped by a toothed artery forceps. These bleeders are then controlled by a ligature passed either by plain needle or by the "boomerang" needle of Young. For venous bleeding or general ooze from the cavity of the prostate, I have found the device of Townsend of considerable value, but I do not insert it through the urethra, but from above.

The control of bleeding is an all important step in the suprapubic operation, and I find that about four times as much time is consumed in caring for the prostatic bed as in the previous part of the operation. Hemorrhage having been satisfactorily attended to, the prostatic cavity is left entirely free, without packing, bag or catheter of any form. This, I feel, is important because the introduction of any hemostatic device means necessarily that spasm at the neck of the bladder will be set up and will cause infection, or possibly allow bleeding, besides resulting in a good deal of acute discomfort immediately after operation. In other words the avoidance of all forms of hemostatic appliances conforms to the well known principle of putting the parts at rest.

The bladder is then closed by interrupted sutures, care being taken to make exact approximation especially of the lower part of the wound. In the upper part of the wound in the bladder is inserted a drainage tube of about the size of the little finger. It is important that this drainage tube be brought up through the abdominal wound in an oblique direction thereby permitting early closure of the wound aided by intraabdominal pressure. The muscles are approximated, leaving a drain of rubber tissue in the prevesical space, and the skin is sutured by a few deep interrupted stitches.

Following operation the patient is given a hypodermoclysis of a liter of salt solution and morphia as needed. The suprapubic drainage tube is removed on the second or third day and replaced by suction drainage which is later replaced by an inlying urethral catheter through which two or three times a day the bladder is washed out with a solution of silver nitrate 1-5000. The patient is urged to take fluids and be as active as he feels like immediately after operation, and should certainly be out of bed by the fourth day unless there be some special contraindication.

After healing has taken place effort should be made, whenever possible, to see the patient at frequent intervals in the ambulatory clinic for bladder lavage.

Of the last hundred cases admitted to the Peter Bent Brigham Hospital with a diagnosis of obstructing prostate fifty-four were operated on by the one-stage suprapubic route, sixteen were operated on by the perineum, and in thirteen a two-stage operation was done. Sixteen were not operated on and in one case drained by suprapubic trocar operation was refused. The average postoperative days in hospital have been twenty-six in the one-stage suprapubic cases, thirty-one in the perineal cases, and thirty-nine in the two-stage cases.

Discussion

Alfred Mitchell, M.D., Portland, Maine: Dr. Chute and Dr. Quinby have covered their subjects so thoroughly that one must agree with their views and I feel that there is but little for me to say in the way of discussion.

The superiority of any one method can only be determined by improved mortality rate and better functional results.

For many years I confined my supra-pubic prostatectomy work to the two stage method as I did not dare do otherwise, as the loss of a case done in one stage would provoke criticism, but for the past few years have employed the one stage method in an increasing number of cases with excellent results. The patients are what might be called preferred risks without much disturbance of kidney function or of the cardio-vascular system. When it can be safely performed it has manifested advantages; a shorter stay in the hospital, more prompt healing of the wound and the avoidance of an extra operative procedure which to patients of a nervous temperament means much.

In the two stage method I find it an advantage to give catheter drainage before doing the first stage as not infrequently one finds patients very ill, when even such a simple procedure as cystotomy under local anesthesia is done too early, marked disturbance of the kidney function resulting. Would like to ask Dr. Chute if he has similar experiences.

Would also like to inquire as to difficulty with supra-pubic fistulae persisting for some time after operation. I think most of us have occasional cases; I never happen to have had one occur in a one stage case although I have had much fewer cases of this type, but have had obstinate cases where the two stage method has been employed. In the few instances where I have found it necessary to dissect out the fistulous tract, have not found obstruction at the bladder neck which is supposed to be a cause of persistent fistula. Dr. Quinby mentions the importance of inserting the drainage tube into the bladder at the proper angle as tending to bring the tissues together more satisfactorily.

C. L. Deming, M.D., New Haven: I have been very much interested in Dr. Chute's and Dr. Quinby's paper on suprapubic prostatectomy. The fact that I do 75% of my prostatectomies by the perineal route, does not in any

way make the suprapubic discussion uninteresting. They have covered the subject well and brought out some very interesting points.

The tissue removed at operation should be absolutely the same whether removed suprapubically or perineally and therefore, the post-operative results should be similar.

I prefer to drain the bladder pre-operatively by means of the urethral catheter. Patients with diverticulum of the bladder, stones in the bladder and those with severe infections do not tolerate the catheter well. However, all other cases are usually treated by the catheter method. Some patients tolerate the catheter better than others. Those who have bladder spasms and considerable bladder distress, are given opium suppositories containing ½ grain of opium every four hours for three or four doses shortly after the introduction of the catheter. Those cases who have a severe urethritis are treated by frequent changes of the catheter every two or three days and a thorough irrigation of the urethra before the catheter is reinserted. I believe the suprapubic prostatectomy should be done at one operation if possible as the shock from suprapubic operations is a factor to be considered. While they have suprapubic drainage, I believe a blind enucleation is better than a wide open operation, as it does not open up avenues for infection.

Dr. Quinby's complete exposure is an excellent one and satisfies good surgical technique but I believe the question of infection is to be considered more gravely than a complete exposure of the base of the bladder. The most serious cases are done in our Clinic by the blind method and show very little surgical shock and do not have a severe reaction with respect to the vital signs.

The post-operative care is important and we should give more attention to the infection of the bladder. We begin on the 8th day to wash out the bladder through a large silver catheter. Many of these cases have a considerable amount of thick, purulent, residual urine. By keeping the wound clean with irrigations, the wound heals more readily and there is less likely to be complication from infection. 50% of the cases are discharged from the Hospital with sterile bladder urine. Those with kidney infections, and badly trabeculated bladders are extremely difficult to sterilize.

I believe Dr. Quinby's discussion of the direction of the suprapubic fistula is an extremely important one. If the fistula is allowed to form just back of the symphysis pubis, we have one wall which is non-collapsible and rigid similar to the empyema fistulae. After the fistula is carried upward towards the navel, compression of the fistula is brought about in all directions. While we do not have a fistula which persists, there are some which are rather slow in healing for which there are three main reasons: (1) the fistula forms a bottle-like tract with a dilatation of the lumen between the rectus fascia and the skin. The fistula should be kept straight with the skin wound wide open and larger than any of the tract below (2) infection (3) obstruction at the vesicle neck due to flap of mucous membrane. While none of these difficulties appear serious, they are to be considered and recognized in these cases who have prolonged suprapubic drainage.

There is no doubt that suprapubic prostatectomy has its place; but I believe that in the future when we recognize prophylactic medicine and give it more consideration than we do today, we shall see prostatic tumors earlier so that operations will therefore be advised before serious complications of the bladder arise and that the operation whether done suprapubically or perineally will be much better than it is today.

E. Granville Crabtree, M.D., Boston: I think the discussion of Drs. Chute and Quinby has been extremely instructive and interesting to us all. This pointed out a situation so different from that which I remember at the first medical meeting that I attended that it is worthy of remark. At that meeting the suprapubic operators were arrayed in battle formation against the perineal operators. There was no middle ground. Time has, as you have seen, converted us all into middle ground positions in which we operate in that manner which seems best to fit the particular prostate under observation.

I am not convinced that in my mind it is wise to do a one-stage operation as suggested by Dr. Quinby, except in selected cases. This, I take it, is in agreement with his point of view for he mentions its applicability to selected cases.

I cannot bring myself to operate all cases in that way because catheter drainage in the very old, with badly infected bladders, does not seem to me to be adequate preparation of these patients for operation. I furthermore believe that freer drainage than can be provided by the small catheter which many of the smaller urethras will admit will prepare these patients for operation more quickly by more open drainage suprapubically through a large tube.

I want to call attention also, both in regard to residual urines after operation and in relation to sinus formation or delayed healing, to the atonic bladder in which the walls are so thick on account of scar tissue and stretching that even after obstruction is removed they are temporarily incapable of producing satisfactory emptying. As a rule these residuals are but temporary but are troublesome in the extreme.

I find myself doing more nearly what Dr. Chute suggests, operating the majority of large benign, easily enucleated prostates suprapubically by the two-stage operation, and operating the doubtful cases, cancers and the fibrous pros-

tates by perineal route. Sometimes I have done a total prostatectomy on the smaller fibrous prostate uniting the bladder neck to the severed urethra around a catheter with only rubber dam drainage of the perineal wound and found it to give very satisfactory results.

R. F. O'NEIL, M.D., Boston: The subject of suprapubic prostatectomy has been so ably covered by these two papers that there remains little to be said. There are, however, a few points I should like to touch upon,—mainly matters of technique. In doing the one stage operation my own choice is for the simplest possible technique which is to enucleate the tumors by the intraurethral method, using one or two fingers according to the thickness of the abdominal wall with the forefinger of the other hand in the rectum to steady the prostate. Some years ago Dr. Hugh Cabot at our hospital ran a series of prostatectomies under direct vision, employing the wide opening of the bladder and suture of the capsule for control of bleeding. It seems to me that the incident of embolus was higher when retraction and the placing of sutures had been employed than in the simpler technique.

In regard to the control of bleeding, I employ as a routine a haemostatic bag and have had no cause to regret it. In the cases where no means are employed to check hemorrhage, the urine remains bloody for several days and the patients lose a good deal, which is not good for them, to say the least.

Epididymitis with the occasional involvement of the testicle going on to abscess and destruction of the organ is a painful, annoying, and at times, serious complication, and occurred some time during the convalescence, at least in my experience in a large proportion of cases, I should say in rather more than 25%.

Preliminary bilateral ligation of the vasa while it is not by any means a new procedure, as it has been done sporadically for years, it is only comparatively recently that it has become a routine measure and has practically done away with epididymitis. In a fair sized series we have had one case of infection of both vasotomy wounds, one case of mild sepsis in one wound, and one case of epididymitis occurring eight weeks after operation. The operation should be done early before instrumentation is done, if possible.

In doing the two stage operation, a point about the cystotomy: the peritoneum should be reflected well back and the opening in the bladder made as high as possible so that at the second operation it can be safely enlarged towards the pubis, if necessary. I prefer to employ a good sized rubber tube. If the patient has to remain on drainage for a long time, the sinus will contract down about a self retaining catheter. There is no doubt but what the enucleation of the prostate is more difficult in the two stage operation than in the one, being in direct proportion to the interval between the two operations. Another reason for not having the tube too close to the pubis is the possibility of infecting the symphysis pubis. We have seen two cases of osteomyelitis or osteochondritis of the pubis occur probably from this cause. It is a rare complication and one of which there is little or no mention in the books or literature.

The indications for the two stage method have already been fully discussed. I feel that in some of these cases with a much over distended bladder, decompression with a catheter should be done first as these men often become very ill after cystotomy.

In discussions on prostatic surgery not so very long ago there were strong and partisan advocates for this or that route or this or that method; it is interesting now to note that the operator suits the method to the patient and not the patient to the method.

The younger urologist of today can hardly appreciate the progress that has been made in prostatic surgery during the last 25 years. The procedures are now so well standardized and the gradual applications of drainage, forcing fluids, attention to the circulation, and the use of spinal anesthesia, have now become a matter of routine.

When I was an intern at the Massachusetts General Hospital in the late gay 90's, about the only urological operations that were done were litholapaxy, perineal section for stricture, and the occasional opening of the bladder for stone or suspected tumor. Kidney operations were few and far between as there were no cystoscopes or x-rays, and generally for perinephritic abscess or pyonephrosis. A little later the earlier prostatectomies were done generally about the third day after the patient entered the hospital and under ether anesthesia with dire results. Then came the gradual change to the technique of the present.

I want to congratulate the President on his choice of subject and readers, as I consider a meeting of this sort of great value.

J. D. BARNEY, Boston: The papers of Drs. Chute and Quinby have given us a very perfect stereoscopic picture of the subject of suprapubic prostatectomy. This picture is so perfect that I cannot improve upon it but I would like to emphasize a few points. In the first place, I agree that spinal anesthesia is the anesthetic of choice. Secondly, I am a strong advocate of the two-stage operation and except for special reasons, do this in the large majority of cases.

Sometimes in feeble old men who, in my judgment, will not stand a suprapubic operation I remove the gland by the perineal route as I believe this gives less shock and that there is less liability to hemorrhage. In other cases, where the patient is feeble and very ill and where it

is doubtful whether any operation can be done at all I am in the habit of draining these patients with an inlying catheter for a few days so as to get them more or less sized up and to enable me to form some sort of an opinion, as to whether they are likely to stand operative procedures. If, after a few days of this drainage they seem to improve, then I do a cystotomy with the idea of removing the prostate by the two-stage method. I have found this procedure of great value and I do not doubt that it has prevented me from operating upon certain cases prematurely.

I firmly believe that the Hagner bag is the best method of controlling hemorrhage in the majority of instances. I do not, however, agree with a previous speaker that it is a comfortable apparatus. It may be a source of comfort to the surgeon to know that his patient is not going to bleed during the night but for the patient it is a source, generally speaking, of tremendous discomfort and this is one of its drawbacks.

On the whole I think that one of the most important items to consider in the performance of prostatectomy by any route is preoperative drainage. This is so important a feature that I think all these cases should be drained for too long, rather than too short a time and that the drainage in many instances should be supplemented with large quantities of salt solution, given by the sub-pectoral route. One is always inclined to listen to the pleadings of the patient and his family that the hospital bills are running up and that there is every reason to make haste with the operation and as a consequence many of these patients receive too little preoperative drainage. One should avoid being influenced by these pleas.

As regards salt solution I find that many operators employ it only occasionally as a sort of "treat" to the patient, whereas I am firmly convinced that it should be practically a part of the daily diet. All these old men are toxic from the results of infection and back pressure and the important thing is not only to drain them but to flush them out and even though they are able and willing to take large quantities of water by mouth it does not do the work that sub-pectoral salt solution will do.

EDWARD L. MERRITT, M.D., Fall River: There has been one phase of this subject that no one has mentioned and that is the value of advanced Trendelenberg position during operation. It is of value for two reasons if one is using the newer method of spinal anesthesia, for it gives you your position for anesthesia control, and also brings the intestines well up into the abdomen away from the bladder. When doing a one-stage operation this facilitates approach and gives a better exposure for the so called open method.

I believe these prostatic cases should receive the best of medical care during their surgical treatment and it is my custom to have each patient carefully examined by an internist prior to operation and he also follows the case postoperatively recommending whatever is necesary from a medical standpoint.

For anesthesia we use Neocain intraspinal, Dr. George Kershaw administering all anesthesias and Dr. B. W. Garneau his associate carefully following the patient's blood pressure reading both during and after the operation. It is our experience that teamwork such as just described is a tremendous asset.

I have enjoyed the papers of the evening very much indeed and feel that although much has been written on this subject there is always something we can carry away with us of value. I am sure the other members present feel as I do that we have learned a great deal tonight.

WALTER D. BIEBERBACH, M.D., Worcester: In reference to vasectomy preceding prostatectomy, I believe patients entering the hospital should have this done before any extensive urethral instrumentation is performed and before placing the patient upon indwelling catheter drainage. I can recall three cases of epididymitis in the past three years following suprapubic prostatectomy in which the vas was sectioned at the time of removal of the gland. I feel that there is a possibility of infection advancing to the epididymis as a result of instrumentation or the indwelling catheter that may become active later regardless of vasectomy at the time when the prostate is removed. Of course I realize that a mistake can be made in ligating some other structure of the cord. In such an event this would answer the question of epididymitis following operation. On the other hand too clean a dissection of the vas may free it of its lymphatics which are left intact and not included in the vasectomy thus allowing infection to reach the epididymis through this route. However, I would be pleased to hear what doctors Chute and Quinby have to say on the subject.

ROGER GRAVES, M.D., Boston: This has been a very profitable discussion but it seems to me that we agree in most of the fundamentals. There will always be differences in matters of detail for details must vary with the personal equation in this problem as in all others. The subject is a broad one and we might talk indefinitely about its many phases. I will stress three points only. To begin with, I agree that open dissection controlled by direct visualization of the field is a far safer and more surgical procedure than the blind enucleation of the gland. In closing the wound, moreover, it is of the greatest importance to place the suprapubic tube obliquely, as Dr. Quinby has said, with its inner pole in the summit of the bladder and its outer pole high in the line of incision. The low sinus placed directly over the symphysis and

sphincter, is the one that heals slowly or not at all. In persistent fistulae, so placed, I believe that the faulty position in the bladder wall and a periostitis of the symphysis pubis in which the sinus tract becomes involved, often combine to prevent normal closure. Secondly, I am convinced that spinal anesthesia is the anesthesia of choice in prostatectomy. Among its many advantages is one which has not been mentioned,—that the hypodermoclysis following operation may be given beneath the fascia lata in the thighs, in a region which is still anesthetic. This obviates the necessity for the subpectoral infusion in a conscious patient, a procedure which sometimes seems more productive of discomfort than the operation itself. Finally, it seems to me that the next great advance in prostatic surgery will come when we meet the problem earlier. There should be more of these operations in the sixties when hearts and kidneys are still relatively normal, and fewer in the seventies when irreparable damage has been done. Prostatectomy should be a matter of election to prevent the further development of degenerative changes, not a matter of late necessity for the mere mechanical relief of retention when these organic changes already have taken place. To this end the operation will be performed more and more, in my opinion, in younger individuals who are just beginning to complain of urinary disturbances but in whom there are definite signs of obstruction marked by hypertrophy and residual urine.

ERIC STONE, M.D., Providence, R. I.: May I add another to the rapidly increasing list of reasons why certain cystotomy sinuses persist unduly. There is general agreement that infection of the walls and of the bladder are contributing causes. Recently such a case in my hands did not close despite persistent attention to the antisepsis of the bladder until the infection was finally controlled by massage of the seminal vesicles, which were found to be the site of a chronic inflammatory process.

DR. O. D. PHELPS, Worcester: I feel that members of this association have had a rare opportunity to listen to the able discussion of prostatic technique presented by these two leaders of our profession.

I have utilized for a number of years, two guide sutures put into the bladder at the time of the first stage operation in such a manner as to bring the bladder edges tight to the abdomen, thereby facilitating the formation of the suprapubic fistula, carrying the catheter. I believe that this method makes a much smaller dead space at the upper portion of the wound and with a drain in the Space of Retzius both ends, of the incision, are well taken care of.

WILLIAM G. TOWNSEND, M.D., Burlington, Vt.: In regard to acquiring aseptic urine following prostatectomy, it has always seemed to me that one should look to the kidneys as a source of constant infection. We all know how many times on the autopsy table we have seen infected and dilated ureters and kidneys in cases of bladder neck obstruction.

A CASE OF SPONTANEOUS PASSAGE OF LARGE MULTIPLE RENAL CALCULI

BY J. D. BARNEY, M.D., F.A.C.S.

THE case which I wish to present is one of multiple bilateral renal calculi occurring in a young man who was admitted to the Orthopedic service last Fall for a fracture of the femur. During his convalescence from this injury he complained of a pain in the side and some x-rays were taken. This examination showed both kidneys containing many large calculi. Fig. 1.

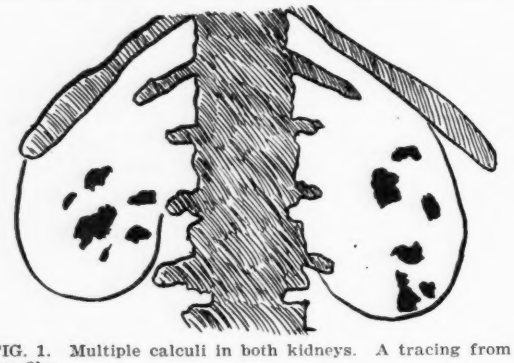


FIG. 1. Multiple calculi in both kidneys. A tracing from the x-ray film.

A cystoscopic study and pyelograms were done. You will see that there is very marked dilatation of the calices and pelvis of the right kidney and a somewhat less extensive dilatation on the left side. Fig. 2.

FIG. 2. Bilateral pyelogram showing marked dilatation of both pelves, more on the right. A tracing from the x-ray film.

As the left kidney was obviously the better of the two I decided to operate upon this first.

On exposing the kidney it looked quite normal in size and consistency and was not very adherent. The pelvis was opened and the interior of the kidney thoroughly explored but, to my consternation, no stone could be found. I felt very badly about this until later, during the convalescence from the operation when another x-ray showed that there were no stones whatever in the kidney upon which I had operated. A still later x-ray taken in the Out Patient Department confirms this finding and, as you will see, the outline of the kidney is definitely shown and there is no suggestion of the presence of calculi. You will, also, observe that the calculi in the right kidney seem to be smaller in number and altogether different in appearance from what was seen in the original plates.

The explanation of my failure to find stones in the left kidney at the operation lies in the fact, which I did not know at the time, that between this event and the taking of the pyelogram the patient had passed a considerable amount of sandy, calcareous material but neither he nor others who had seen what he had passed had any idea at all that it was enough to account for all the shadows seen in the plates. I suppose that these calculi were soft and friable and that under forced fluids and, possibly due to the effects of cystoscopy and a pyelogram they had become broken up and passed spontaneously. I am very doubtful if I shall now operate upon the right side.

It is unusual in my experience to have a large number of good-sized stones pass from the kidney in this manner and I think the case is one which illustrates the great value of having x-rays of any stones, either in kidney or ureter, taken as near to the operation as possible.

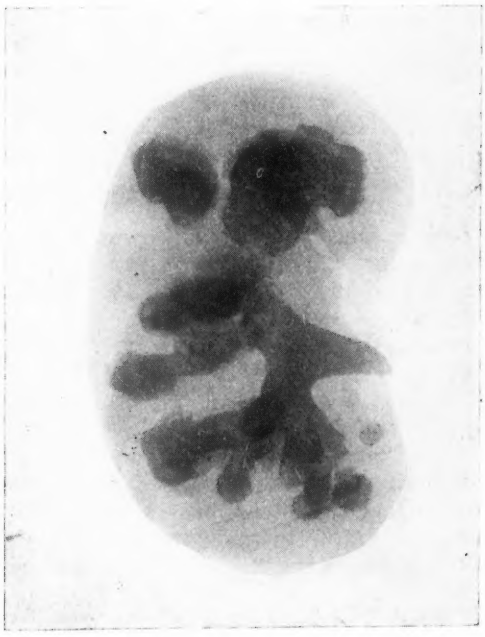
GIANT RENAL CALCULUS WITH SYMPTOMS ON THE OPPOSITE SIDE

Notes on Specimen

BY O. D. PHELPS, M.D., F.A.C.S.

I WISH to show pictures of a case of Renal Calculus where the entire symptoms were attributed to the other side. A man of 52 years was brought to the hospital complaining of intense pain in the left side extending down the thigh. He was a patient 6 years ago with a similar attack but was discharged with no positive findings.

We passed a catheter up the left ureter without difficulty and found a normal functioning kidney. Pyelogram negative. We were surprised at the apparent injection of the right kidney. We feared we had made a mistake and injected the wrong side but further evidence condemned the right kidney and nephrectomy as shown by the specimen made us sure of the condition.



Case of Dr. Phelps. Giant Renal Calculus.

PRIMARY TUBERCULOSIS OF THE PROSTATE

(Report of a Case)

BY W. G. TOWNSEND, M.D.

ALL investigators are in accord, I believe, that primary tuberculosis of the prostate is a rare entity. A cursory review of the available literature up to 1910 is quite barren of such cases. Saxtorph, in 10,016 autopsies found only nine specimens of isolated tuberculosis of the prostate. Walker, in 1911, after a very careful search reports only three cases. More recently, however, other men, chiefly Barney and Koll, have each reported cases of unquestionable, primary tuberculosis of the prostate.

I am well aware of the fact that it is dangerous to report such a case, based on clinical evidence alone, but in view of the lapse of time

since operation, absence of symptoms, follow up records and careful physical and laboratory examinations it is my opinion that the following is a case of primary tuberculosis of the prostate.

F. R., No. 51357, entered the Mary Fletcher Hospital August 15, 1925, complaining of frequent and difficult urination. The age was 52 and he was a weaver by occupation. There was no history of cancer or tuberculosis in the family, neither was there of exposure. He had experienced no surgical operations, fractures or any serious illness. For the past fifteen years there had been frequency, aggravated by riding in an automobile, occasional ardor and four weeks prior to admission the patient had been seized with acute retention of urine, necessitating several catheterizations.

On examination that patient appeared sick. He had a pinched expression and though well developed was undernourished. The general physical examination was negative. Urological examination revealed an enlarged, nodular prostate. The vesicles were not palpable. The testicles, epididymes and vasa were normal. A catheter obtained eight ounces of infected, residual urine. A diagnosis of carcinoma was made, operation advised and accepted. The operation consisted of the classical, two stage, suprapubic prostatectomy. The prostate was surprisingly easily enucleated. The incision was closed on the twenty-fourth day and the patient left the hospital in good condition.

Before discharge a checkup on the lungs and genital tract was made with negative findings. Reports from this patient six months and again two years and four months after operation state that he is feeling fine and has no urinary symptoms.

The pathological report of the gland is as follows: sections show extensive areas of so called epithelioid cells, many giant cells and small areas of beginning necrosis. There is also adenomatous hyperplasia of the glandular epithelium. Conclusion: Tuberculosis of the prostate and adenomatous hyperthropy of the prostate.

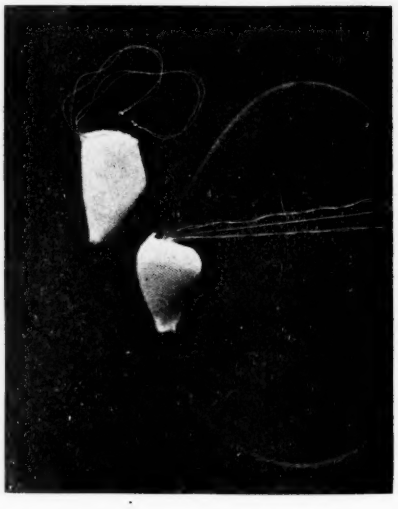
PROSTATIC HEMOSTATIC BAG COVER

BY FRANK H. WASHBURN, M.D., F.A.C.S.

AMONG the active methods for the control and prophylaxis of hemorrhage after prostatectomy, suture of the prostatic sheath is perhaps nearer the surgical ideal than either gauze packing or introduction of the hemostatic bag, but for various reasons is comparatively infrequently used. Gauze packing and use of the Hagner bag, and its modifications, have each their advocates and may be said to be rivals, for the favor of urological surgeons. Both methods possess features of superiority.

Having lost a patient, one contributing factor to whose death was post-operative hemorrhage, not completely controlled by the bag, but eventually by packing, we were led to the adoption of a simple procedure which appears to us to possess most of the advantages of both methods. In considering our case referred to it was our opinion that, while the bag amply served the purpose of pressure, its surface was so smooth it lacked the clot provoking property of gauze so desirable in the particular instance.

After some experiment with various textile materials, we have recently adopted cotton-mesh for the purpose of making a covering for the hemostatic bag and which combination is, we think, working out usefully. This Pilcher bag with cover applied will illustrate our meaning. The ease of introduction and withdrawal



of the pouch loses practically nothing by the presence of the fabric. The device is applicable to any type of prostatic bag intended for introduction and removal by way of a suprapubic opening.

CASE REPORTS

BY R. F. O'NEIL, M.D., F.A.C.S.

(1) PROSTATIC CALCULI. (FIG. 1.)

THE patient, a man in the middle fifties, gave a history of urinary difficulty over quite a long period, terminating in an attack of acute retention. There had been no hematuria. He entered the Emergency Ward, the retention was relieved by an indwelling catheter, and he was admitted to the Urological Service of the Massachusetts General Hospital with the diagnosis of Prostatic Carcinoma.

Examination showed a well developed man in good physical condition. On rectal examination the prostate was enlarged, irregular, fixed and of stony hardness. In one place crepitation could be detected. An x-ray (Fig. 1) was made which showed the pelvic

bones to be normal, and in the area of the prostate, a dense shadow evidently made up of a large number of small calculi. These were successfully removed by perineal operation. Convalescence was uneventful. Without the evidence of the x-ray and the slight crepitation on palpation, the case could easily have been mistaken for one of carcinoma.

(2) A CASE OF PYONEPHROSIS. (FIG. 2 AND 3.) This patient, a man of 45, entered the Urological Service of the Massachusetts General Hospital from the Out Patient Department. He had a drainage tube in the right loin from which dripped pale, clear urine.

He gave the following history: 20 years previously he had had a large abscess opened in the right side which healed after prolonged drainage. Six months ago he had another large abscess opened in the same location; this time the fistula did not close. A cystoscopy was done in the Out Patient Department. A catheter in the right ureter passed at first only a few inches. On further manipulation it was thought it passed all the way to the pelvis but an x-ray showed it had doubled on itself in the dilated lower portion of the right ureter. (Fig. 2). There was no drainage from the catheter. A ureterogram showed a dilated lower right ureter, no injection fluid reaching the kidney. In the hospital sod. iodid was injected through the drainage tube. This showed a large cavity in the right flank with the remains of one or two irregular calices at the upper border. (Fig. 3). Phenol phthalein showed a fair bladder function and a trace of color through the drainage tube. The N.P.N. was within normal limits.

At operation an old pyonephritic sac was found extending from the costal border to the crest of the ileum. It was very adherent from the previous inflammatory condition and the peritoneal cavity was opened while removing it. This was closed by suture. No connection with the ureter below was made out. Convalescence was uneventful.

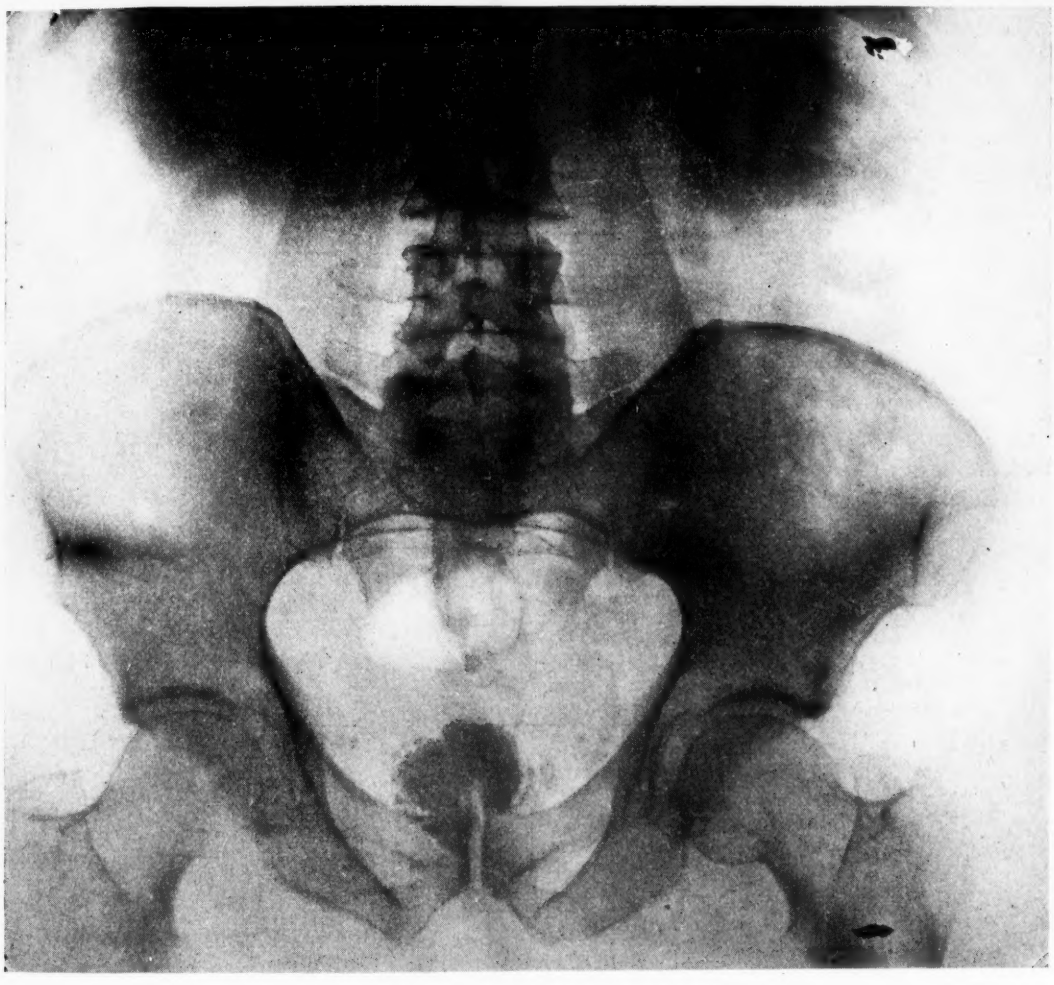


FIG. 1. (O'Neil.) Prostatic Calculi.

(3) RENAL CALCULUS WITH HAEMATURIA. (FIG. 4.)

This case is reported because of the atypical symptoms of calculus. The patient was admitted to the Urological Service of the Massachusetts General Hospital from the Consultation Clinic. He was a man of 35, in good physical condition. For six weeks he had had a profuse, painless hematuria. There were no other symptoms and at no time any referable to the kidney. The urine was a deep red color and remained so, to a less extent, while the patient was in bed, up to the time of operation. The bleeding was typical of a bladder or renal tumor. An x-ray showed a large branched calculus and one or two others in the right kidney. (Fig. 4). Cystoscopy which was difficult, because he had an ankylosed right hip, showed bloody urine from the right side and a normal kidney on the left. Right nephrectomy was done. Convalescence was uneventful.

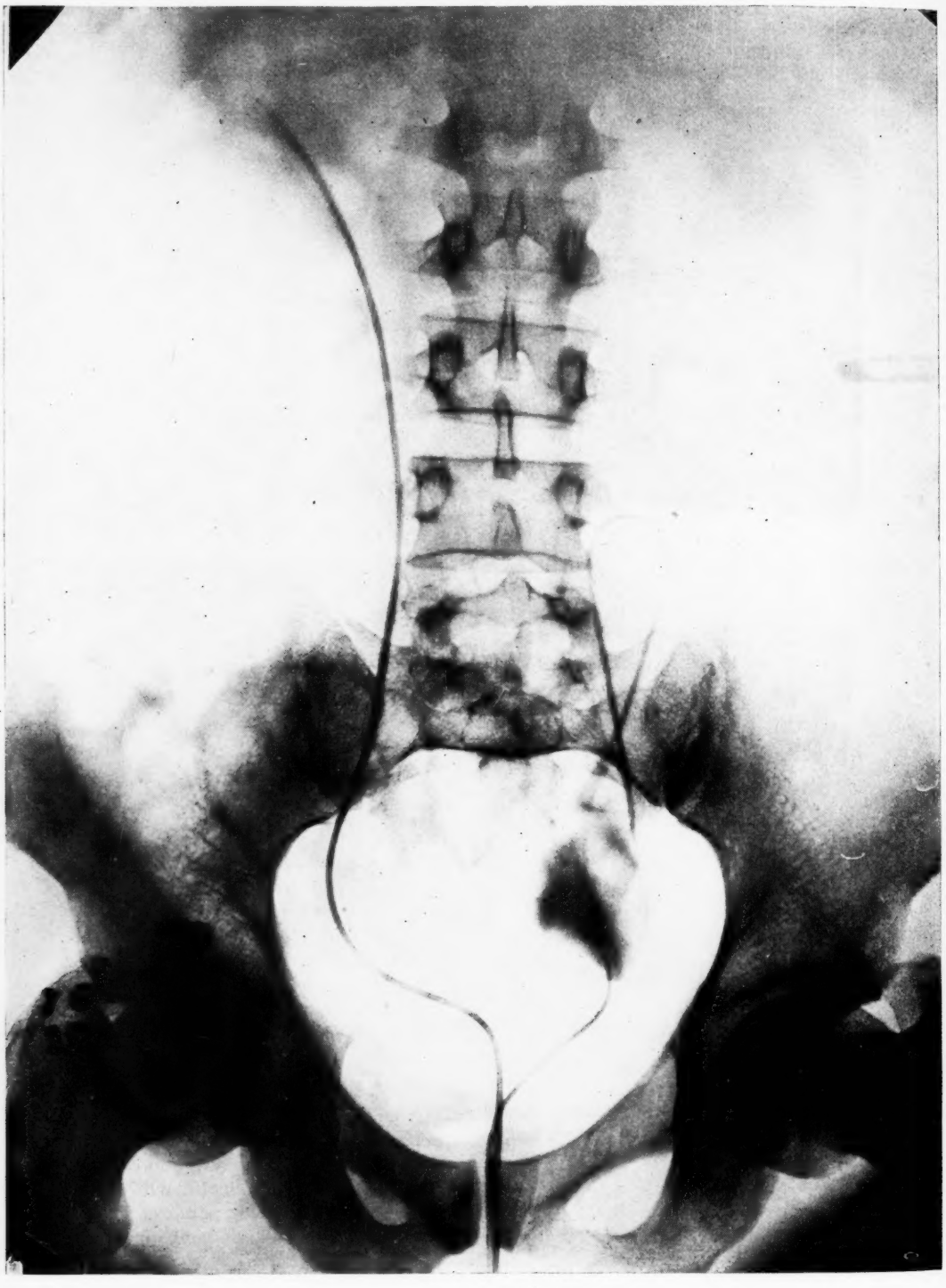


FIG. 2. (O'Neil.) Ureterogram showing dilated ureter and catheter turning on itself.

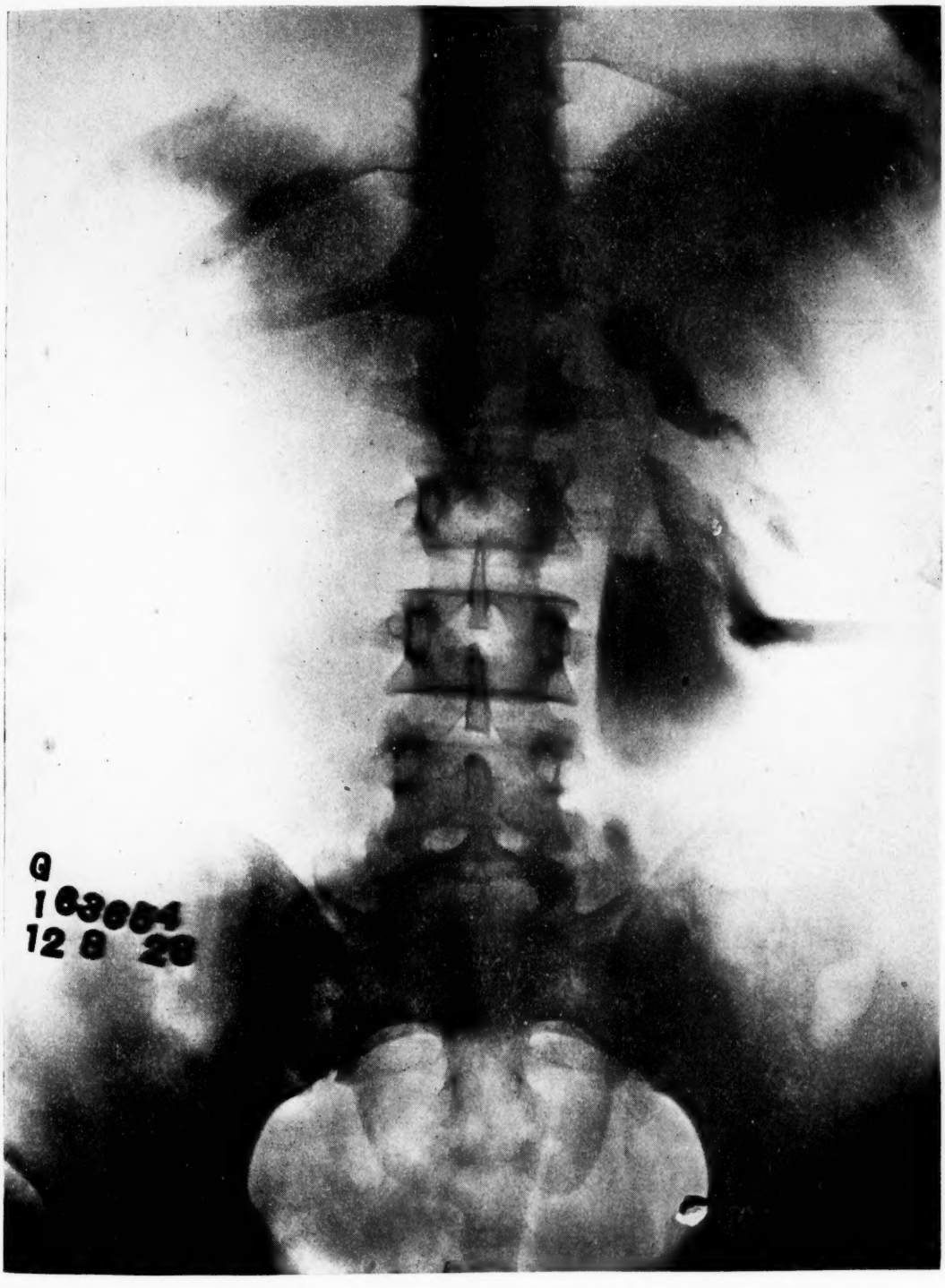


FIG. 3. (O'Neil.) Pyelogram. Injection through drainage tube showing large pyonephrotic sac.

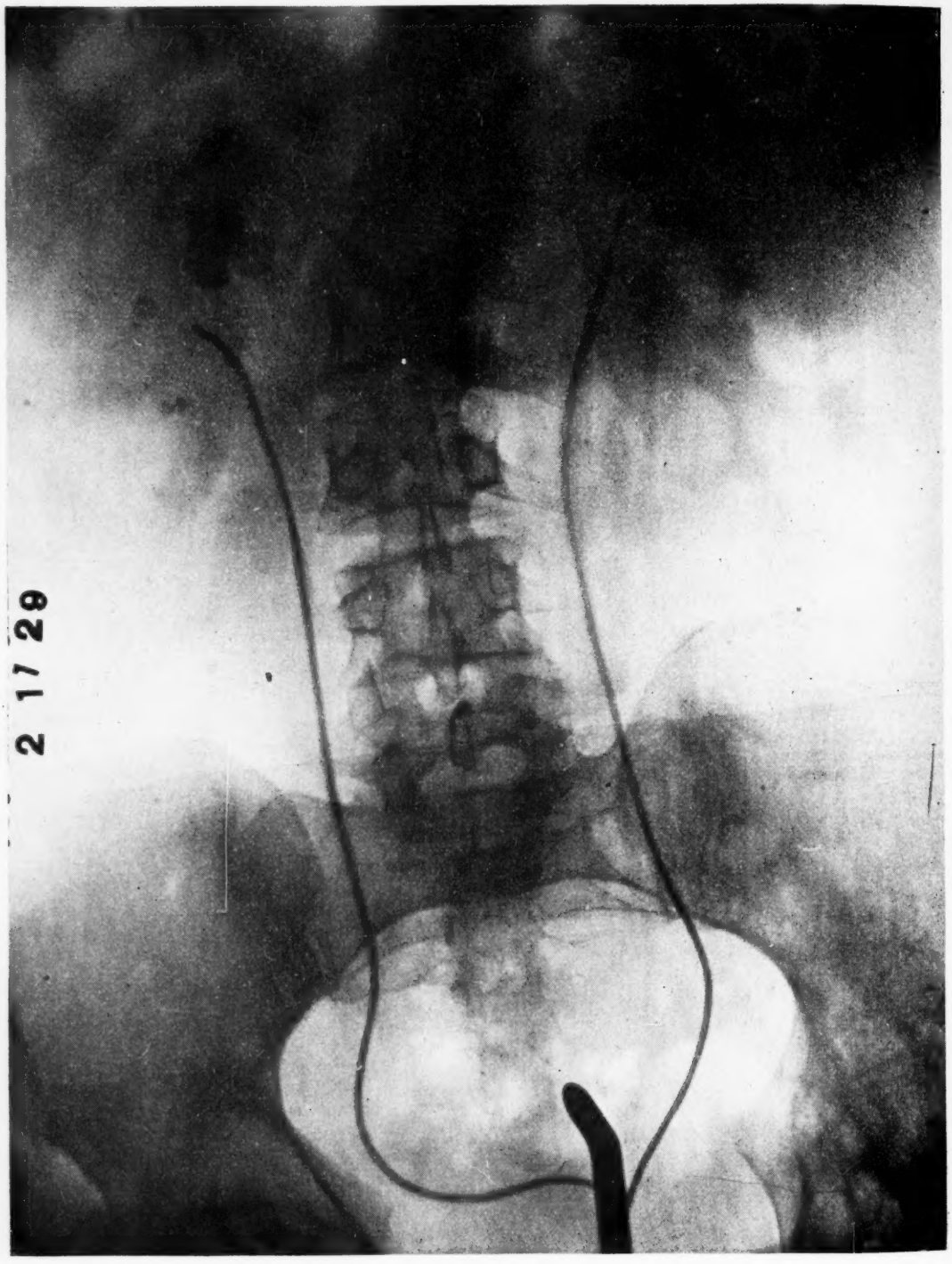


FIG. 4. (O'Neil.) Right renal calculi causing haematuria.

FIG. 1-A. Showing shadows in region of kidney.

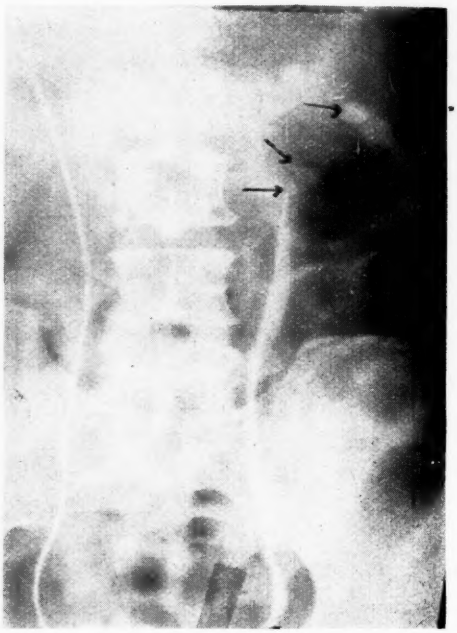


FIG. 1-B. Showing same shadows and catheter tip on the left side obstructed near the lower stone, and the injected dye forced down the ureter instead of filling the pelvis of the kidney.

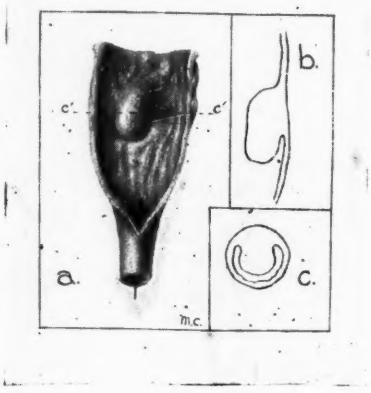


FIG. 2.

OBSTRUCTING PAPILLA OF THE URETER; THE RESULT OF INFECTION AND CALCULUS*

BY J. A. BOWEN, M.D.

THE following case is reported because it illustrates an unusual reaction of the ureter to chronic inflammation and emphasizes as well the importance of early diagnosis and treatment of renal calculi.

W. B. L., a man fifty-eight years old, a consulting engineer, entered the hospital on the 11th of December, 1928, complaining of attacks of severe pain in the left loin accompanied by nausea and vomiting. About two years before this he noticed for the first time diminution in the size and force of the urinary stream, frequency, nocturia, and cloudiness of the urine. He consulted a physician, and after examination was told that he had hypertrophy of the prostate with stone in the bladder and multiple calculi in the left kidney. In February, 1928, he underwent an operation for removal of the prostate and bladder stone, from which he made an uneventful recovery. For about seven months he was in excellent health. Six weeks before seen by us he noted a slight aching pain over the bladder area which gradually increased and spread upward toward the left kidney region, persisting for several hours. About a week later there was a recurrence of severe pain in the region of the left kidney together with increased frequency of urination, pyuria, nausea and vomiting, and abdominal distention. He was relieved only by the administration of morphia. Until two days before entrance to the hospital he felt poorly and occasionally experienced a dull ache in the left side. Forty-eight hours before entrance he had another severe attack which persisted until admission.

Physical examination was unimportant.

Red blood cell count 4,250,000; white blood cell count 17,800; and hemoglobin 80%.

The urine showed albumen in moderate amount, pus, and an occasional granular cast.

Cystoscopy shortly after admission showed a bladder almost normal with well-healed outlet. Ureteral orifices were easily seen and catheterized, and subsequent X-ray showed several shadows suggestive of calculi in the left kidney. An attempted pyelogram on the left side failed, the solution being forced backward down the ureter. The evident diagnosis was that of a stone blocking the ureter on the left, and operation was advised. (Fig. 1-A and B.)

On December 12th the left kidney was exposed through a transverse incision and found to be somewhat larger than normal, but its surface was not unduly adherent to the perirenal fat. The upper portion of the ureter was easily isolated, but in the region of the renal pelvis and pedicle the various structures could be exposed only after considerable dissection of indurated fat. The region of the outlet of the pelvis was much thickened, and just at the uretero-pelvic junction a resistant mass could be felt within the tube which was thought undoubtedly to represent the obstructing stone, or at least an accumulation of gravel. Longitudinal incision over this mass revealed a papillary projection from the wall of the ureter with its apex pointing downward and of such size as almost to block the lumen. (Fig. 2.) Its surface was smooth, but showed definite hyperemia, and on gross inspection together with palpation was found to be made up of dense tissue, highly suspicious of malignancy.

Because of the location of this structure and the possibility of malignancy the ureter below and pelvis above were transsected over an area of about an inch. Further incision into the pelvis allowed the relatively easy removal of two small calculi, after which an X-ray film showed that the kidney was free from further evidence of stone. An anastomosis of the ureter to the pelvis was then undertaken, but could not be satisfactorily accomplished because of the fact that the tissues both on the ureteral and pelvic sides were swollen and indurated to such a degree as to make anastomosis insecure and subject to undue tension. For these reasons, although the anastomosis had been accomplished, it did not seem satisfactory or safe to rely on this, and rather than subject the patient to a persistent urinary sinus which might eventually necessitate a nephrectomy at a subsequent operation, the kidney was removed forthwith. Convalescence was smooth and uneventful.

Pathological Report:—

Gross description:—Specimen consists of 2.7 cm. of a dilated and thickened ureter which is opened longitudinally except at its lower most portion, where the lumen is left intact for a distance of 3 mm. The wall of the ureter is very markedly thickened, measuring approximately 3-4 mm. in thickness. At the upper end of the resected tube there is a projection into the lumen by a smooth polypoid mass which measures 1 x .6 x .7 cm. in its greatest diameters. This mass is firm in its entirety, but its surface is quite soft and velvety. To palpation it seems movable on the outer coats of the ureter. The mucosa is reddened overlying this mass as well as in the ureter below. The examination of the cut surface shows a protrusion or puckering of the mucosa into the lumen with the submucosal stalk extending in at the base. Grossly it does not appear malignant. It seems rather to be a papilloma. Frozen section reveals puckering of the mucosa with a very dense infiltration by inflammatory cells and numerous dilated blood vessels in the connective tissue stalk. It appears in frozen section to be a puckering of the mucosa and submucosa due to inflammatory reaction rather than a true papilloma.

Also submitted is a kidney which measures 12 x 6 x 5 cm. Over the outer surface it is rather reddish with a capsule which strips moderately well leaving behind a rather edematous surface in which can be seen many small areas of punctate hemorrhage. The kidney when opened longitudinally shows a quite edematous surface. The calices are evened out in some respects. The mucosa of the pelvis is very swollen and edematous and hemorrhagically inflamed in many parts. The cortex is somewhat narrowed, measuring 7 mm. in depth. When closely examined small punctate hemorrhages can be seen in what appear to be glomeruli of the cortex. The medulla shows fairly normal relationships except that the exposed surface of the pelvis where the papilla is formed, is quite edematous and swollen. A good deal of gross blood is also present. The ureter leading away from this is somewhat indurated and has a rather thickened wall. Two stones are also submitted. These are quite firm, almost of the hardness of calcium. They are rather rough and

*From the Urological Clinic, Peter Bent Brigham Hospital, Boston, Mass.

granular in appearance. Impression: pyelitis, slight hemorrhage into glomeruli of the kidney and stones.

Microscopic report:—Section of renal parenchyma shows a tremendous infiltration by inflammatory cells throughout the cortex and medulla. The great majority of these cells are of the mononuclear variety and oftentimes they form large foci. They naturally replace the renal substance in some regions. In addition there is a heavy red blood cell congestion which in some areas amounts to free hemorrhage, and areas of connective tissue increase are diffusely spread through the section. There is red blood cell congestion into the fatty tissues which is also infiltrated by connective tissue. No evidence of tuberculosis is seen.

A section through the ureteral protrusion shows it to be composed of connective tissue, smooth muscle, and mucosa. There is a chronic inflammatory response of many lymphocytes which sometimes form nodules. A red blood cell congestion is also observed as well as a heavy polymorphonuclear leucocytic infiltration of the submucosa. The microscopic appearance fits in well with the gross impression of puckering associated with an inflammatory reaction.

Diagnosis:—Ureteral calculi. Ureteritis with infolding of ureteral wall. Pyelitis. Pyelonephritis.

DOCTORS DO NOT CHARGE TOO MUCH SAYS *PLAIN TALK* WRITER

Doctors do not charge too much, argues Dr. Harold E. Hullsiek, eminent surgeon of St. Paul, Minnesota writing in the June issue of *Plain Talk*.

Dr. Hullsiek marshals many facts and statistical tables in proof of his contention. He first shows that the average physician's income in the United States is nearer three thousand dollars a year than the twelve thousand annual income used as a basis by those who charge that doctors ask too much for their services.

"That doctors' fees have risen in the past ten years I think is generally not true," writes Dr. Hullsiek. "I do not feel that the fees are exorbitant nor do I feel that they could be lowered without receding further from the minimum income figure necessary to insure the doctor the sort of living to which his investment in time and money entitle him. I am very firm in the conviction that an increase in the free work would give no permanent relief, the opinions of social-service workers to the contrary notwithstanding. To the advocates of State medicine I can only point out that the Veterans' Bureau spent in 1927 to care for a small fraction of the 5,000,000 men who were in France $570,000,000."

Dr. Hullsiek points out that the poor and rich receive expert medical attention without having a concomitant financial burden, while the great middle class suffers. And then he shows that the number of families in the group to whom the problem of sickness is most trying represents less than one per cent of the total population. Dr. Hullsiek's figures also show that the relative proportion of the family budget allowed for medical cost has constantly grown smaller, while actually both the need and the cost have increased.

"The annual bill for medical care in the United States is between $2,000,000,000 and $4,000,000,000—depending on the authority quoted" reads his *Plain Talk* article. "The lesser figure is usually considered a fair estimate. Contrast that figure with those given in the following list of expenditures for other important items:

Jewelry	500 millions
Autos and parts	2 billions
Candy	1 billion
Perfumes and cosmetics	750 millions
Musical instruments	250 millions
Chewing-gum	50 millions
Cigarettes	800 millions
Tobacco and snuff	800 millions
Cigar—and cigarette-holders	1 million
Firearms and shells	50 millions

"Stuart Chase estimates that twenty-two billions are expended annually on what he calls super-luxuries. If the above figures can be taken as anywhere near correct a certain amount of skepticism is justifiable regarding the view that a prohibitive cost is the crux of the problem.

"That hospital charges, as paid by the public, have risen disproportionately to the cost of other commodities I believe is a statement that is entirely untrue.

"We find an average increase in the cost of ward rates over the entire country of 78 per cent, and in private room rates of 53 per cent. The average increase in the cost of running the hospitals is 96 per cent, so that the patient is paying for room rent, whether he is in a ward or private room, relatively less than he paid in 1913.

"It is also definitely known that today a patient convalesces more rapidly and thus returns to work sooner, and earlier ceases to be an economic loss."

Dr. Hullsiek cites a survey of the city of Denver which shows that the doctor actually collects 35 cents for every dollar's worth of medical service given.

NON-PARASITIC CYSTIC DISEASES OF THE LIVER

BY EDWARD J. OTTENHEIMER, M.D.,* AND KENNETH KINNEY, M.D.*

THE purpose of this paper is to present two cases of cystic disease of the liver, non-parasitic in character, one of which was associated with polycystic kidneys. That non-parasitic cysts of the liver are rarely encountered may be inferred from the admirable report by Moschowitz, who, in 1906, reviewed the literature of the world and could find only 85 cases.

Non-parasitic cystic disease of the liver may appear at any period of life. It has been discovered at necropsy in the fetus, but perhaps more frequently it has been found in individuals who have lived past middle life without manifesting, apparently, any marked symptoms of impaired liver function. It is probably somewhat more common in women. Heredity seems to play some part in its occurrence.

It is significant to note that the condition is associated frequently with congenital anomalies in other parts of the body such as hyperdactylia, hypospadias, meningocele, super-numerary mammary glands, and conspicuously, congenital polycystic kidneys. Since the latter is not a strikingly unusual clinical finding, it may be assumed that if it were possible to examine the liver, both macroscopically and microscopically, in every case of polycystic kidneys the incidence of non-parasitic cysts of the liver might be found higher than it is conceded to be at the present time.

Reviewing the literature on this subject, one is impressed with the fact that there exists no unanimity of opinion regarding its etiology. Previous to 1906 the most important theories advanced to explain its origin were:

(1) That the cysts represented dilatation of normal biliary ducts which had become obstructed by overgrowth of connective tissue resulting from some low grade inflammatory process.

(2) That they were true adenocystomata, or at least neoplastic in origin.

(3) That a developmental abnormality was at fault. It was Still who first suggested this theory, and he believed the cyst formation was due to a persistence of the lumina between the columns of hypoblastic cells from which the liver ultimately is formed.

In 1906 Moschowitz published the results of his intensive investigations and concluded that non-parasitic cysts of the liver originate in aberrant bile ducts, which he was able to demonstrate both in the acini and in the capsule of Glisson. He believed that if these aberrant ducts became obstructed either by a super-imposed inflammatory process or possibly by some unknown congenital mechanism, cyst formation would result. The presence of aberrant bile ducts he explained on the basis of congenital maldevelopment and the plausibility of this theory became enhanced in the light of the association of these cysts with other congenital malformations.

Since 1906 a number of cases have been reported that, under careful histo-pathological examination, have confirmed substantially the contention of Moschowitz. On the contrary, other authors have had cases in which they were unable to discover aberrant bile ducts and hence were led to assign other causes for the presence of the cysts.

This is peculiarly true of the solitary cysts, which may grow to a relatively large size. Deaver has reported one case of solitary cyst, the contents of which was bloody fluid and the pathological report hemangioma. Other cases have been thought to be true retention cysts containing bile and Meckel has reported a true dermoid cyst of the liver.

The weight of authoritative opinion, however, seems to hold that the theory of Moschowitz explains the multiple cysts of the liver that are congenital and so often associated with polycystic kidneys.

It is conceivable that there is need for a more definite classification of non-parasitic cysts of the liver, possibly along the lines suggested by John F. X. Jones, who classifies them as follows:

I	Teratomatous or embryomatous cysts.
II	Pseudocysts.
III	Lymphatic cysts.
IV	Cystic degeneration of the liver with polycystic kidneys.
V	Cysts which arise from blood vessels.
VI	Cystadenomata.
VII	Ciliated epithelial cysts.
VIII	Retention cysts.

From a clinical standpoint non-parasitic cysts of the liver give no characteristic symptomatology. The multiple cysts may give rise to vague gastro-intestinal symptoms which resemble those of chronic cholecystitis or chronic pancreatitis. Jaundice is rarely present. If the kidneys are cystic, the presenting symptoms may be those of a beginning renal insufficiency. With solitary cysts which have attained a large size severe pain, simulating a gall stone colic, occasionally occurs and may lead one to suspect an acute cholecystitis.

Physical examination, in the case of the multiple cysts, reveals a very definitely enlarged liver, which is irregularly nodular because of the varying sizes of the cysts. Clusters of small cysts may simulate a single large nodule. The whole mass feels very much like a liver that is

*For record and address of author see "This Week's Issue," page 1113.

riddled with metastatic carcinoma. The relatively well nourished appearance of the patient, however, belies this diagnosis. If the kidneys, too, are enlarged and irregular, the diagnosis suggests itself at once. Pyelography may disclose the cystic condition of the kidneys. In our first case the kidneys were not palpable and although we did a pyelogram of the right kidney, pre-operatively, we were not able to make a diagnosis of polycystic kidneys. Post-operatively, we did another cystoscopy in order to determine the extent of kidney impairment by means of a differential functional test and in addition we made a bilateral pyelogram. Even though we knew both kidneys were cystic, it was impossible to draw this conclusion from the pyelograms.

The value of cholecystography as an aid in the diagnosis is questionable. In our first case the cholecystogram showed no definite gall bladder shadow by the oral administration and, unfortunately, this result was not checked by the intravenous method. Further, we have no basis for deductive comparison since we can find in the literature no other case in which cholecystography has been performed.

Where a solitary cyst exists, the large fluctuant mass can be made out in the right upper quadrant. It may be confounded with a distended gall bladder or even an echinococcus cyst. Exploratory laparotomy is necessary, usually, to establish the diagnosis.

The pathological findings in these cases of multiple liver cysts have been presented in detail by many authors and have evoked much controversy which it is unnecessary to discuss here. In our second case an entire cyst, about the size of a walnut, was shelled out completely so that, unfortunately, no liver tissue was obtained. The gross appearance of the liver, however, studded with hundreds of cysts of varying sizes, was typical of the condition. In our first case a section of the liver was obtained and in addition to the report by Dr. Wilshusen of the Yale School of Medicine a section was forwarded to Dr. F. B. Mallory of the Boston City Hospital. Dr. Mallory has kindly given us permission to quote from his personal communications.

> "You can certainly go so far as to state that the appearance of the cysts in your specimen favors the view that they arise from abnormalities or congenital fault in the development of the bile passages."

Dr. Mallory also studied one of his own cases and says:

> "I should favor the view that the cysts are due to dilatation of abnormal bile duct formation; they cannot possibly be considered a tumor as some writers have claimed. There must be some common disturbance in duct formation to account for the presence of cysts in the kidneys, in the liver, and occasionally in the pancreas."

The following are the case histories of our cases.

CASE I, Mrs. N. T., Chart No. 1102, age 58, admitted to St. Joseph's Hospital November 25, 1926. Patient comes in complaining of upper abdominal distress.

Family History: Father died, aged 54, of "acute diarrhea". Mother died, aged 70, of "gall stones". Three brothers and two sisters died in infancy. Husband died, aged 55, of angina pectoris. One brother and one sister living and well. One sister has "kidney trouble" and enlarged kidneys.

Marital History: Patient has been married 35 years. Two children are living and well. One child died at infancy. She had no miscarriages.

Past History: Patient says that her general health has been good. She had the usual diseases of childhood without sequelae. Periods began at the age of 14 and were regular and painless until her menopause, which occurred about twelve years ago. Menopause lasted three years and was comparatively uneventful. There has been no bleeding since. The patient has never had any serious illness in her life and has never been operated upon.

Present Illness: The patient dates the beginning of the present illness to about two years before admission, when she had an attack of pain in the upper abdomen, associated with nausea and vomiting. She thinks that at that time she was slightly jaundiced. The attack lasted for two or three days and left some soreness in the right upper quadrant. Since that time the patient has had many attacks of a similar nature, though not associated with jaundice, but always with more or less nausea and occasionally with vomiting. The pain is never tremendously severe in character, but consists of a dull ache in the epigastrium, radiating at times to the right shoulder. In the interim between attacks the patient has been bothered with considerable indigestion. Soon after eating the patient experiences some discomfort in the epigastrium, associated with gaseous eructation. Occasionally she has "sour stomach". Fatty foods and meats in general seem to disagree with the patient more than other foods. Her bowels have moved regularly without the aid of catharsis. She has had no trouble with her urine, neither dysuria or hematuria. She gets up occasionally at night to void. She thinks that she has lost some weight, probably about twelve pounds, but this has been extended over a period of seven or eight years. She has had no chronic cough and no dyspnea. She has never had any swelling of her feet and ankles. She does not think she is a nervous woman.

Physical examination shows a well nourished woman who looks as though she had lost some weight. She gives an intelligent history. Her pupils are equal, regular and react to light and accommodation. The sclerae are clear. The upper teeth are false, the lower teeth are poor. The throat is negative. The heart is not enlarged and there are no murmurs. The lungs are clear and resonant. Inspection of the abdomen shows nothing unusual. Palpation reveals the presence of a mass which occupies almost the entire epigastrium and extends over into the right upper quadrant and down to about 3½ cms. above the umbilicus. The mass is irregular and hard and somewhat movable. There is very little tenderness over the mass. The spleen cannot be palpated. There is dullness on percussion over all the area occupied by the mass. Vaginal and rectal examinations are negative. Blood pressure is 140/100.

Urine examination shows the urine to be slightly turbid; light amber in color; reaction, slightly acid; specific gravity, 1007; albumin, faint trace; no sugar, no phosphates, no urates, no acetone, no diacetic acid. Microscopic findings are as follows: no casts; ten to fifteen pus cells in almost every field, rare clump; no erythrocytes; many squamous epithelial cells. Blood sugar shows 78 mg. per 100 cc. of blood. A blood smear and differential count shows 4,730,000

erythrocytes; 6,000 leucocytes; haemoglobin, 70%; polymorphonuclears, 73%; lymphocytes, 24%; eosinophiles, 2%; transitionals, 1%. Wassermann is negative.

Cystoscopy — November 27, 1926 — An observation cystoscope is passed into the bladder without obstruction. The bladder wall is normal. A catheterizing cystoscope is passed without difficulty, and a No. 6 x-ray catheter placed up the right ureter. There seems to be some obstruction about 5 cms. from the ureteral orifices, and the catheter cannot be passed further. Capacity of the pelvis upon the injection of sodium iodide seems to be about 15 cc. A right pyelogram is then made.

Cystoscopy — December 21, 1926 — A catheterizing cystoscope is passed into the bladder and catheters are placed to the pelvis of each kidney. A differential functional test is performed. The appearance time on the right side is 3½ minutes and on the left side four minutes. The function on the right side is 3% in fifteen minutes, and on the left side 4% in fifteen minutes. A bilateral pyelogram is then made.

Radiographic examinations—Dr. Kinney—November 15, 1926—The oesophagus appeared normal. The stomach was medium in position and tone, of normal size, of regular outline and showed normal peristalsis. There was no residue at six hours. The duodenal cap was large, filled readily and emptied freely. It was non-tender. Motility was good, the head of the barium column being at the hepatic flexure in six hours. The ileum and cecum appeared normal. Twenty-four hour examination revealed nothing additional except for ptosis. Impression: Negative G. I. Series.

November 17, 1926—Films of the kidney and bladder regions fail to show either kidney outline definitely. The liver appears somewhat enlarged and low. There is a small shadow in the right pelvis, which may be an ureteral calculus in the lower end of the right ureter. Plain films of the gall bladder region show no evidence of calculi.

Cholecystograms—oral method—show no definite gall bladder shadow at 15, 17, 19 hours, or one hour p.c. These findings indicate a pathological gall bladder.

November 27, 1926—Film of the pelvis with catheter in the right ureter shows the course of the ureter to be not unusual in position. The shadow previously noted and thought possibly calculus in the right ureter is approximately 1 cm. toward the midline from the ureter. There is a dense shadow approximately 2 cm. in diameter just above and in front of the left sacro-iliac joint, which is probably a calcified gland. Pyelogram on the right shows a slightly enlarged, well filled renal pelvis with well filled calyces. The latter show nothing unusual. The course of the upper ureter appears somewhat tortuous. This is probably due to ptosis of the kidney although an aberrant vessel to the lower pole should be considered. Left kidney outline appears slightly low and somewhat enlarged.

December 21, 1926—Film of the kidney region with catheters in place shows the ureters pursuing normal courses as far as seen, the left ureteral catheter going as high as the level of the upper border of the fifth lumbar, and the right as high as the lower border of the third lumbar. The kidney outlines are not distinctly seen on either side, due to motion and overlying gas. Both kidney outlines seem enlarged but otherwise not unusual in size, shape or position. Bilateral pyelogram shows both renal pelves incompletely filled. The one on the right shows an enlarged renal pelvis. The major calyces do not appear unusual. Pyelogram on the left shows an incompletely filled renal pelvis, and nothing unusual except at the upper portion where a circular defect is noted on the mesial side. A second pyelogram, taken after partial withdrawal of the ureteral catheters and subsequent refilling of the pelves, shows some tortuosity of both ureters, most marked on the left. Pyelogram shows nothing unusual in addition to that noted in the previous examination.

Operation—Dr. O'Neill—November 30, 1926

Preöperative Diagnosis:	? Cholecystitis with stones; pancreatitis: ? Cirrhosis of liver.
Postoperative Diagnosis:	Congenital cystic disease of the liver with polycystic kidneys.

The abdomen is opened through a high right rectus muscle splitting incision. The sub-cutaneous fat seems to be rather darker in color than normal. The peritoneal cavity is opened without incident. The omentum and the fat appendages of the intestines are somewhat bile-stained. The pelvic organs are normal to palpation. The appendix is surrounded by adhesions, but it is otherwise negative, and it is removed in the routine manner. The spleen is normal in size and consistency. The gall bladder has a normal, bluish color, and its walls are thin. No stones can be palpated. The liver is considerably enlarged and presents, all over its surface many cysts of varying sizes, from a millet seed to an English walnut. In some places there are clusters of these cysts. The cysts are bluish white in color and contain a thin watery fluid, slightly yellow in color. The part of the liver surface that is not covered by cysts is granular on palpation, and there are areas of scars of apparently healed cysts. In the midline —just anterior to the stomach—there is a particularly large cluster of cysts. The right kidney is about normal in size, and its surface is covered with a similar distribution of these cysts. The left kidney is considerably larger than normal, and it, too, contains many of these cysts—especially one large one at the lower pole. The stomach and duodenum seem to be normal. The visceral peritoneum contains no cysts. Two sections are removed from the anterior edge of the right lobe of the liver for pathological examination. It is necessary to take two sutures with the liver needle to stop the oozing from the liver surface. The gall bladder is aspirated and about 25 cc. normal bile obtained. A plain rubber tube is then placed into the gall bladder and inverted with a double row of purse-string sutures. The tube is brought out through the lower angle of the incision, and the wound closed in layers in the usual manner.

Pathological report: Gross: The specimen consists of an appendix and two pieces of cystic tissue measuring 2 cm. and 1.5 cm. respectively. The pieces of cystic tissue seem to be made up of bunches of small cysts with dense, fibrous connective tissue capsules and contain clear serous fluid. Between the cysts at one place in the block there is a firm, brown tissue resembling liver tissue.

Microscopic: Section through the portion of tissue removed from the liver shows several small, cystic areas lined with flattened epithelium and attached to each other by a fibrous connective tissue framework. Adjacent to these cystic areas there is considerable liver tissue arranged in the usual lobular formation. About the portal vessels and the small bile ducts there is a diffuse infiltration of small, round cells. This round cell infiltration also extends into the connective tissue framework of the cystic area. The liver cells themselves show no change.

Anatomical Diagnosis: Multiple congenital cysts of the liver.

(Dr. Wilshusen)

CASE II, Mrs. N. S., Chart No. 1890, age 55, admitted to St. Joseph's Hospital January 4, 1928. Patient comes in complaining of "soreness in the right side".

Family History: Father died, aged 52, cause unknown. Mother died, aged 89, of pneumonia. Five brothers and one sister living and well. One brother died, aged 40, of "fits".

Marital History: Husband, aged 59, and seven children living and well. Three children died in infancy. One child died, aged 16, of "infantile paralysis". One child has pulmonary tuberculosis.

Past History: The patient's general health has been good. She does not recall any diseases of childhood. She has had influenza, pleurisy, and "typhoid-pneumonia". Her appetite is fair, meals regular, bowels always constipated. Her periods began at the age of 15, were painless, regular, of four or five days' duration, profuse flow. The menopause occurred at the age of 50 without incident. There has been no bleeding since. She has never had dyspnea, palpitation, or swelling of the feet and ankles. She has no urinary trouble and no chronic cough.

Present Illness: Patient dates the beginning of the present illness to about five days before admission, when she began to complain of headache, aching in arms and legs and back of neck. She thought she had a slight cold, and had a slight sore throat. She felt cold and had what she calls a chill. Following this, her temperature rose to 102, the night of the first day of her present illness. The following day, however, temperature was normal. In the morning she felt considerably better, but had some nausea and very slight abdominal pain. Her bowels moved with the aid of a cathartic. Since that time the patient has complained of slight soreness in both lower abdominal quadrants, perhaps more marked on the right. Her bowels have been somewhat constipated. She has had no trouble with her urine. Her throat has improved. She has not vomited and has had no severe pain at any time. She says that about Thanksgiving time she had a somewhat similar attack of soreness in the right lower quadrant. She says also that she is bothered with considerable bloating, following meals, and some gas which she eructs and passes with some relief. Patient has never been jaundiced.

Physical examination shows a fairly well nourished woman who has rather a hectic flush to the face. There is a question of an icteric tinge to the sclerae. The pupils react to light and accommodation. Throat is slightly red. The tongue is dry and coated. There are no teeth. There is an adenomatous goifre in the left lobe of the thyroid gland which is freely movable and smooth. The heart is not enlarged and there are no murmurs. The lungs are clear and resonant. Examination of the abdomen shows nothing on inspection. On palpation there is a mass in the right lower quadrant in the region of McBurney's point. The mass is about the size of a lemon, is smooth and regular. It is quite tender to the touch. The mass seems to be fixed to the lateral abdominal wall. Vaginal examination shows a marked cystocele and rectocele. There is some laceration of the cervix, but both vaults seem to be clear. The mass which is felt in the abdomen cannot be felt through the vagina or rectum.

Reports of laboratory work are as follows: Urine—yellow, specific gravity, 1014; reaction, acid; albumin, very faint trace; no sugar, no phosphates, no urates, no diacetic acid, no acetone; microscopic examination shows no casts, rare white blood cells, rare red blood cells, few squamous epithelial cells, much bacteria, few calcium oxalate crystals. Blood examination shows 4,700,000 erythrocytes; 8,600 leucocytes, haemoglobin, 90%; polymorphonuclears, 80%, lymphocytes, 20%. Wassermann test negative.

Cystoscopy—January 9, 1928—The capacity of the bladder is 150 cc. The catheterizing cystoscope is passed easily into the bladder. The bladder wall is normal. Both ureteral orifices are pouting and surrounded by considerable injection. The right ureter is catheterized and a right pyelogram is performed.

Radiographic examinations—Dr. Kinney

January 9, 1928—A film of the kidney and bladder region with an ureteral catheter in the right ureter shows the right kidney outline. The left is indistinct, due to overlying gas. The right kidney outline does not appear unusual in size, shape or position. The ureteral catheter in the right ureter pursues a normal course. The palpable mass in the right lower quadrant is distinguishable and appears below the lower pole of the right kidney. Both transverse processes of the fifth lumbar vertebra are sacralized, the right being quite long and extending to the ileum. The latter process has an area of bone loss, approximately 7 mm. in diameter within it. Pyelogram on the right shows a small renal pelvis with small well cupped calyces. Ureterograms on the right show no variation from the normal.

January 10, 1928—Opaque enema filled the large bowel quickly and well. It showed no irregularities of outline except at the lateral aspect of the cecum, where, in the region of the palpable mass, there is an irregular filling defect approximately 4½ cms. in diameter. By palpation the internal portion of the cecum could be rotated over this. The ileocecal valve was incompetent. A film taken after evacuation shows only fair emptying, and the filling defect now measures 7 cms. in diameter. These findings are compatible with a tumor of the postero-lateral aspect of the cecum or a retrocecal tumor, or an inflammatory mass on the postero-lateral aspect of the cecum. The first is thought most probable.

Operation—Dr. Ottenheimer—January 14, 1928

Preöperative Diagnosis: ? Carcinoma of cecum: ? Acute appendicitis with abscess.

Postoperative Diagnosis: Chronic appendicitis; congenital cystic disease of the liver.

The abdomen is opened through a five inch right rectus muscle splitting incision and the peritoneal cavity is opened without incident. The tubes and ovaries are normal. The pelvis is negative to palpation. The cecum is adherent to the lateral abdominal wall and is considerably thickened. These adhesions are broken up and the cecum is delivered. The mass is found to consist of an appendix which is surrounded by omentum and adherent to the wall of the cecum itself. The appendix is then removed in the usual manner, the stump being inverted with over and over linen. Exploration of the upper abdomen shows the liver to be considerably enlarged and its surface is irregularly nodular because of the presence of many cysts which are scattered over the whole surface of the liver. The cysts are thin walled and bluish white in color. They vary in size from a pea to an English walnut. Puncture of a few cysts shows them to contain a clear watery fluid. Many of the cysts are in clusters. The gall bladder is soft and compressible and contains no stones. On the wall of the gall bladder are small raised nodules, the size of a pin head, which resemble some of the fairly small cysts of the liver. Palpation of both kidneys shows no evidence of any of these cysts. The spleen is negative to palpation. There are no cysts in the pancreas. One cyst about the size of a small English walnut is removed from the anterior edge of the liver for pathological examination. A few sutures are necessary to stop the liver bleeding, and after the omentum has been mobilized to cover the cecum, the wound is closed in the usual manner in layers without drainage.

Pathological report: Gross: The specimen consists of an appendix and a cystic structure. The appendix is very short and fat and measures 2 cm. in length. The outer surface is rough but not blood stained and on section the usual structure is seen. The cyst is

thin walled and measures 2 cm. in diameter. It contains a clear watery fluid. Both surfaces are smooth.

Microscopic: The mucosa of the appendix is intact and shows no leukocytic infiltration. The wall of the appendix is greatly thickened and consists largely of adult fibrous tissue which is free from cellular infiltration. At the periphery of the section there are numerous congested blood vessels and in the meso-appendix there is seen to be an increase in fibrous tissue and a small round cell infiltration. The cyst is lined by a single layer of flattened cells with deeply staining nuclei. The wall is composed entirely of fibrous tissue in which are a few small round cells. Anatomical Diagnosis: Chronic appendicitis: Fibrous walled cyst. (Dr. Tyson.)

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HOSPITALIZATION PROBLEM IN WAYLAND

BY HERBERT L. LOMBARD, M.D.,* AND MARIE R. GIBLIN*

Massachusetts Department of Public Health

AT the request of the hospital committee of the town of Wayland, the Massachusetts Department of Public Health conducted a survey between December 26, 1928, and January 2, 1929, to determine whether a hospital was needed in that town. The surveyors attempted to interview at least one member of every family and obtain information from this individual regarding the entire household. No return visits were made to houses where no one was found at home. Records were obtained from 548 families, totaling 2088 individuals (Table I), which represents 85 per cent. of the estimated population of Wayland for 1928 (2447).

TABLE I

SURVEYED POPULATION IN WAYLAND

NO. OF INDIVIDUALS IN FAMILY	NO. OF FAMILIES	TOTAL NUMBER OF INDIVIDUALS
(1)	(2)	(3)
One in family	23	23
Two in family	141	282
Three in family	127	381
Four in family	93	372
Five in family	61	305
Six in family	44	264
Seven in family	36	252
Eight in family	11	88
Nine in family	3	27
Ten in family	6	60
Eleven in family	2	22
Twelve in family	1	12
Total	548	2088
Percent of total population of Wayland		85.3
Estimated population of Wayland		2447

An opinion was obtained from each member of the surveyed group as to whether or not he would patronize a Wayland hospital. The figures were tabulated both by families and individuals and were found to be practically identical.

Seventy-two per cent. of the inhabitants of Wayland signified their desire for a hospital in that town. Table II shows that this percentage was fairly evenly distributed among families of various sizes, except in some of the very large ones where the individuals were too few in number to make the figures statistically significant. Among the group which had attended a hospital in the past three years, 72 per cent. said they would patronize a hospital in their own community. (Table III.) It will be noted that the percentage of those who were willing to patronize a Wayland hospital increased as the economic status, which was measured by the type of bed the individual used in the hospital, decreased. It was assumed that an individual receiving treatment in a private room was of higher economic status than an individual in a ward, although in some cases this assumption was probably fallacious.

TABLE II

OPINIONS AS TO WHETHER THERE SHOULD BE A HOSPITAL IN WAYLAND

NO. IN FAMILY	YES	NO	DOUBTFUL	TOTAL	PER CENT. YES
(1)	(2)	(3)	(4)	(5)	(6)
One	16	5	2	23	69.6
Two	195	33	54	282	69.2
Three	267	54	60	381	70.1
Four	264	38	70	372	69.1
Five	216	43	46	305	70.8
Six	182	38	44	264	68.8
Seven	200	22	30	252	79.4
Eight	72	8	8	88	81.8
Nine	27	0	0	27	100.0
Ten	51	1	8	60	84.9
Eleven	14	0	8	22	63.6
Twelve	0	0	12	12	0.0
Total	1504	242	342	2088	72.0

The mere fact that 72 per cent. of the inhabi-

*For record and address of author see "This Week's Issue," page 1113.

tants wanted a hospital does not establish the need for such an institution. To determine whether a hospital should be built in Wayland, both the illnesses and the extent of past hospitalization have been studied. In the year ending December 25, 1928, there were reported to the surveyors, 1067 illnesses among the 2,088 individuals, or an accrued morbidity rate of 511 for every 1,000 persons. Six hundred and eighteen of these illnesses, or approximately the illnesses of three out of every ten of the inhabitants, were sufficiently severe to confine the individuals to bed.

TABLE III.

OPINIONS ON PATRONAGE OF PROPOSED HOSPITAL BY INDIVIDUALS WHO WERE HOSPITALIZED 1926, 1927, 1928.

TYPE OF SERVICE	YES	NO	DOUBTFUL	TOTAL	PER CENT. YES
(1)	(2)	(3)	(4)	(5)	(6)
Private Room	84	24	26	134	62.6
Semi-Private Room	56	9	11	76	73.8
Ward	166	20	29	215	77.2
*Private and Semi-Private Rooms	2	0	0	2	100.0
*Private Room and Ward	1	1	0	2	50.0
*Semi-Private Room and Ward	3	1	0	4	75.0
TOTAL	312	55	66	433	72.0

* Patients in hospital more than once and had different types of service.

In addition, there were thirty-two deaths in the year, making a mortality rate of 13.1 per 1,000 which, added to the morbidity rate found in the survey, makes a total morbidity of 524 per 1,000. This rate can be compared with the one obtained in Winchester, 409 per 1,000, and in Shelburne-Buckland, 455 per 1,000.

While the difference between these rates is significant from a statistical standpoint, it does not necessarily imply that Wayland is a less healthy community than either of the other places. It may mean that conditions in the year studied were less favorable in Wayland or that the inhabitants were more co-öperative in their replies.

Table IV shows the number of individuals hospitalized by the size of the family for the years 1926, 1927, and 1928. The average rate per year is 6.9. There is very little variation in the per cent. hospitalized in families of different sizes, with the exception of those composed of two members only, and very large families, where the numbers were too few to be statistically significant. In the same period there were thirty-four individuals who died in hospitals, or a yearly average of 0.5 of the population of the town. This makes the average yearly hospitalization rate 7.4 per 100. It is to be noted that the deaths represent the number of individuals dying in the whole town, while the survey represents only 85 per cent. of the town's population.

Table V shows the hospitals patronized by the residents of Wayland in 1926, 1927, and 1928. The two hospitals in Framingham, the Leonard Morse Hospital in Natick, and the Waltham Hospital cared for 61 per cent. of the group hospitalized, while the remaining 39 per cent. were scattered among sixty-two different hospitals.

The diseases which caused hospitalization are listed in Table VI.

Tonsil and adenoid operations were the most common reason for hospitalization, with childbirth following closely in second place. Accidents caused about 6 per cent. of the hospitalization, and appendicitis about 7 per cent.

Of the sick individuals found in the survey, 12.1 per cent. were hospitalized. In a survey in Boston, 17.7 per cent. of the total sick were hospitalized; in a survey conducted in Rochester, 10.7 per cent. were hospitalized; and in the Montreal survey, 9. 5 per cent. The North Carolina survey showed 2.4 per cent., and the Hagerstown, 3.2 per cent.

In Wayland, 20.8 per cent. of the individuals with incapacitating sicknesses were hospitalized. Michael Davis in "Clinics, Hospitals, and Health Centers" states that on the average 12 per cent. of cases of incapacitating illnesses are hospitalized. It would appear that Wayland compares very favorably with other places in respect to hospitalization.

The average length of stay of all patients attending the Massachusetts General Hospital, the Newton Hospital, the Waltham Hospital, the Lawrence General Hospital, and the Brockton Hospital is twelve days. In twenty-five general

TABLE IV.

RESIDENTS OF WAYLAND HOSPITALIZED 1926, 1927, 1928.

NO. IN FAMILY	NO. OF INDIVIDUALS HOSPITALIZED								AVERAGE NO. HOSPITALIZED PER YEAR	PER CENT. HOSPITALIZED PER YEAR	TOTAL INDIVIDUALS
	0	1	2	3	4	5	6	Total			
One	18	5	0	0	0	0	0	5	1.7	7.2	23
Two	251	27	2	0	0	0	0	31	10.3	3.7	282
Three	291	35	26	1	0	0	0	90	30.0	7.9	381
Four	284	23	17	9	1	0	0	88	29.3	7.9	372
Five	245	18	15	4	0	0	0	60	20.0	6.6	305
Six	213	12	8	5	2	0	0	51	17.0	6.4	264
Seven	194	7	4	7	3	2	0	58	19.3	7.7	252
Eight	69	4	0	1	3	0	0	19	6.3	7.2	88
Nine	24	3	0	0	0	0	0	3	1.0	3.7	27
Ten	46	2	2	1	0	1	0	14	4.7	7.8	60
Eleven	14	0	0	1	0	1	0	8	2.7	12.1	22
Twelve	6	0	0	0	0	0	1	6	2.0	16.7	12
Total	1655	136	74	29	9	4	1	433	144.3	6.9	2088

hospitals in New York City the average duration is fourteen days, and in 128 hospitals in Pennsylvania, 12.4 days. Assuming that the larger figure, fourteen days, is a fair average duration for Wayland patients, the number of hospital days needed is 2,570, or seven beds in use constantly. In Massachusetts, 73.0 per cent. of hospital beds are in constant use; therefore, in order to have seven beds in constant use it is necessary that a hospital have a ten-bed capacity.

Another method of arriving at the bed needs of a community is to divide the population of that community by a standard number of people per hospital bed in other places. Table VII shows that there are 244 persons in Massachusetts for every bed in a general hospital. In Framingham, there are 138, Concord, 196, and Natick, 237. To make Wayland's hospitalization equal to that of Massachusetts would require ten beds; to equal Framingham, eighteen; Concord, thirteen; and Natick, ten. The State figure is probably the best, as the hospitalization of patients from other towns is a large factor in individual communities.

TABLE V.

HOSPITALS PATRONIZED BY RESIDENTS OF WAYLAND
1926, 1927, 1928.

PLACE	HOSPITAL	NUMBER IN SURVEY	DEATHS IN WAYLAND
Boston	Massachusetts Homeopathic	17	
	Children's Hospital	16	
	Massachusetts General	13	
	St. Elizabeth's Hospital	6	
	New England Baptist	6	
	Boston Dispensary	4	
	Carney Hospital	3	
	Commonwealth Avenue Hospital	3	
	Emerson Hospital	3	
	Massachusetts Hospital for Women	3	
	Peter Bent Brigham Hospital	3	
	Phillips' House	3	
Brookline	Deaconess Hospital	6	
	Trumbull Hospital	4	
Cambridge	Cambridge City and Cambridge Hospitals	13	
Concord	Emerson Hospital	6	
Framingham	Framingham and Union Hospitals	104	8
Marlboro	Marlboro Hospital	5	
Milton	Milton Hospital	4	
Nashua, N. H.	St. Joseph's Hospital	3	
Natick	Leonard Morse Hospital	120	15
Newton	Newton Hospital	12	
Waltham	Waltham Hospital	60	
Winthrop	Winthrop Community	3	
	Hospitals with two patients each	22	2
	Hospitals with one patient each	23	9
	Hospital unknown		
	TOTAL	468	34

TABLE VI.

CAUSES FOR HOSPITALIZATION OF RESIDENTS OF WAYLAND
1926, 1927, 1928

CAUSE	NUMBER IN SURVEY	DEATHS
Tonsils and Adenoids	100	
Childbirth	88	2
New Born Babies	80	4
Miscellaneous Operations	39	
Appendicitis	33	1
Fractures and Dislocations	15	1
Hernia	15	
Respiratory Diseases	15	5
Accidents	11	3
Communicable Diseases	6	
Rheumatism	6	
Blood Poisoning	5	
Gall Bladder Disease	5	
Adenitis	4	
Kidney Disease	4	
Stomach Trouble	4	1
Throat Trouble	4	
Tumors	4	
Abscess	3	
Neuritis	3	
Observation	3	
Heart Disease	2	3
Cerebral Hemorrhage	1	4
Cancer	0	4
Other Diseases	18	6
TOTAL	468	34

By two different methods an estimate of ten beds has been made as the number needed, presupposing that all the individuals in Wayland in need of hospitalization would patronize the local institution. If surrounding towns would patronize the Wayland Hospital the number of beds necessary would be more. Wayland, Sudbury, Lincoln, and Weston could probably furnish sufficient patients for a thirty-five bed hospital. It is extremely doubtful, however, if all the inhabitants of Wayland would patronize a local hospital and still more doubtful if those

TABLE VII

GENERAL HOSPITALS IN SELECTED MASSACHUSETTS TOWNS

Towns	Estimated Population in 1927	Total Beds	Beds per 1,000	Persons per bed
(1)	(2)	(3)	(4)	(5)
Massachusetts	4,269,000	17,489	4.1	244
Wayland	2,380	0	0	0
Framingham	22,811	165	7.2	138
Sudbury	1,511	0	0	0
Lincoln	1,416	0	0	0
Weston	3,174	0	0	0
Concord	7,310	36	5.1	196
Natick	13,710	58	4.2	237

of Sudbury, Lincoln, and Weston would go to Wayland for hospitalization.

A twenty-five bed hospital would seem to be the largest possible institution that would be maintained by the patronage of individuals of the four towns. Such a hospital could be built at a cost somewhere between $100,000 and $150,000. This would leave a little over $100,000 of the money left by Mr. Parmenter for endowment. In House Document 400, (January, 1927,) the average weekly cost of maintaining a hospital with less than fifty beds was found to be $35.81 per bed. This would make the yearly cost of maintaining a twenty-five bed hospital approximately $46,000 a year. While the interest from the endowment would reduce this somewhat, it would be necessary to obtain between $30,000 and $40,000 from patients, private donations, or taxation. Considering that Wayland is now using but seven beds and that over one half of the beds in a twenty-five bed hospital must be occupied by residents of other towns, this amount seems rather excessive.

The survey has not taken into consideration the problems of staff, consulting physicians, nurses, and employees, although it is realized that these would need major consideration.

A Wayland wing of ten beds might be added to any one of the hospitals in the nearby towns. This could probably be built at an expenditure under $65,000, which would leave $200,000 for maintenance. If the money were invested at 6 per cent. about two-thirds of the total maintenance cost would thus be met. This would allow Wayland residents to receive hospital care at an average cost of $12 per week, a figure much lower than the one which would be required by a separate hospital.

CONCLUSIONS

1. Seventy-two per cent. of the inhabitants of Wayland desire a hospital in the town.
2. At present the inhabitants of Wayland are receiving adequate hospitalization in various institutions.
3. All the cases needing hospitalization in Wayland could be cared for adequately in a ten-bed hospital.
4. The cost of hospital maintenance is such that a ten-bed hospital is not feasible.
5. A larger hospital would need to draw patients from the surrounding towns and the clientele would not warrant a hospital larger than twenty-five beds.
6. The cost of construction of a twenty-five bed hospital would reduce the amount left for endowment to such an extent that a considerable part of the maintenance cost of approximately $35 a week would have to be met by patients' fees, private donations, or taxation.
7. A ten-bed wing added to an existing hospital would leave sufficient funds for endowment so that hospitalization could be received at a moderate figure.

RECOMMENDATION

While at the present time the people of Wayland are receiving adequate hospitalization and do not need additional accommodations it would seem advisable, in view of the facts that money is available and better hospital facilities are desired, that a ten-bed wing be added to an existing hospital.

INSPECT NEWTON HOSPITAL ADDITION

More than 3000 persons May 12 inspected the $1,500,000 addition to the Newton Hospital. It was the second day that the magnificent new structure was open for public inspection, approximately 2000 visitors having been conducted through it on Saturday afternoon.

The building with all its various parts was open to visitors from 1 to 5 o'clock, and the guests were led on inspection tours by the officials of the institution, doctors and nurses, under the direction of Charles G. Kelsey, chairman of the board of trustees, and Miss Bertha Allen, superintendent.

The guests gave high praise to all concerned in the erection and equipment of the new hospital, which is now one of the best in the United States. The very latest appliances have been installed, including a light-signal system to summon doctors, nurses and other attendants, and lead-lined X-ray room.

Approximately $1,000,000, or about two-thirds of the cost of the structure was raised by public subscription, leaving about $500,000 yet to be raised for payment for the building and equipment. It is a five-story structure and provides for 130 beds, with room to double the number if necessary. With the old buildings, the hospital now can provide for about 240 patients.

Residents of Wellesley have organized and are trying to raise $100,000 to provide that the Newton Hospital will be open to patients from their town and to have representation on the board of trustees, thus saving them from erecting a $100,000 hospital in their community which adjoins Newton.—*Boston Herald.*

VERMONT STATE MEDICAL SOCIETY

CARE OF THE EYES IN INFANCY*

BY WILLIAM G. RICKER, M.D.†

THE one disease which may result in impaired vision that the attending physician can prevent is gonorrheal ophthalmia. It is his duty to give proper prophylactic treatment. So much importance has been laid upon the so-called Credé treatment with silver nitrate that a procedure which is more important than all has been quite often overlooked. Proper cleansing of the region of the eyes at the proper time is more essential even than the instillation of silver nitrate although the latter should not necessarily be omitted.

At the moment of birth before the cord is tied while waiting for the placenta to bleed into the baby, the head should be dried to avoid entrance of any of the fluids from the birth canal into the eyes. The face should then be carefully cleansed, especially the region of the eyes, using whatever method the physician may choose but in any case being thorough. Extreme care should be taken not to open the eyelids until the skin of the lids both upper and lower is completely free of any maternal secretions. This should be done by the physician himself or under his immediate direction or by an assistant in whom he has implicit confidence. It is well at this time as an additional precaution to sponge the eyelids and upper portion of the face with alcohol.

After the skin is clean then and not until then should the eyelids be carefully separated and any material adhering to the eye lashes should be carefully sponged away. There is no doubt that this alone in the great majority of cases will prevent this dreaded disease. Gonorrheal ophthalmia can result only in case the organisms themselves gain entrance to the conjunctival sac. If completely removed from the vicinity of the eyes it is obvious that they cannot infect.

After the foregoing procedure has been completed then as an additional precaution it is wise to instil one or two drops of one per cent. silver nitrate into each conjunctival sac.

There is one procedure most important in the care of the eyes in case ophthalmia develops. The secretion of pus in this disease is very great and its presence on the surface of the cornea causes erosion, ulceration and future loss of vision. Whatever medication is adopted extreme care should be taken that the pus is removed at frequent intervals, as often as every ten or fifteen minutes in the aggravated cases. The lids should be opened at any cost even if it involves the cutting of the outer canthus and the pus allowed to escape. At the same time the eye should be freely irrigated by a solution of boric acid or a normal saline solution. This can well be done by the use of a medicine dropper, filling the tube every time so far as compression of the bulb will allow and washing the cornea until it is clean.

Personally, I have treated several cases by this method alone without the use of any form of silver or any other medication, some of these cases being severe, and in every case so treated there was no loss of vision whatever.

Summary: Cleanse the eyes externally immediately after birth. Prevent the entrance of infectious material into the conjunctival sac. Use silver nitrate as an additional precaution. In cases of developed ophthalmia do not allow the cornea to remain in a bath of pus.

*Read before each County Medical Society, March, 1929.

†For record and address of author see "This Week's Issue," page 1113.

REDUCTION OF MATERNAL MORTALITY*

BY OLIVER N. EASTMAN, M.D., F.A.C.S.†

UNDER the combined auspices of the Vermont State Medical Society and the Bureau of Child Welfare, it is my privilege to talk to you on the subject of Maternal Mortality in our State. The United States as a whole does not occupy an enviable position as regards Maternal Mortality Statistics. Dr. Brooke Bland is credited with the statement that we have the highest maternal death rate of twenty-one of the leading nations.

In reviewing the Maternal Mortality of Vermont State over a period of ten years, 1918-1927, I find there were 489 deaths.

—Puerperal albuminuria and convulsions accounting for 152 deaths or approximately 1/3 the total.

—Puerperal Sepsticemia, including septic infections, as phlegmasia alba dolens with emboli, 113 or approximately ¼ the total.

—Accidents of Pregnancy, (1) Abortion 23. Ectopic Gestation 14.

—Puerperal Hemorrhage 52, making a total of 89 or approximately 1/5 the total.

The remaining 135 deaths resulted from various causes, many ill defined. Maternal deaths

*Read before each County Medical Society, March, 1929.

†For record and address of author see "This Week's Issue," page 1113.

from septicemia are relatively high in our cities while death from eclampsia was relatively high in the rural communities.

Of the specific causes of death one notes that most of the deaths in our state can be classified under three major heads. In order of their importance as regards cause of loss of life we learn that, 1st Puerperal Toxemia, 2nd Puerperal Septicemia and 3rd Hemorrhage demand major consideration. It is my wish to discuss briefly these three groups, considering recent literature and my own experience in the conditions mentioned.

TOXEMIA OF PREGNANCY

Under this head we will consider first the toxic vomiting of pregnancy. Our most recent plausible etiology of this condition is that it is believed to result from a disturbance of carbohydrate metabolism with a deficiency of carbohydrate reserve. This deficiency results from a low carbohydrate intake on the part of the mother plus the extra burden of foetal requirements, to which she is unaccustomed. Paul Dodds and Paul Titus of Pittsburgh, in the study of 40 cases, found a low blood sugar reading characteristic of the condition and the ratio of deficiency corresponded to the severity of the illness.

The prophylactic treatment is to supply carbohydrates, either sweetened orange juice or pineapple juice with crackers. On awakening the patient is to lie flat on back, eyes closed for twenty minutes. Glucose is given intravenously when the stomach fails to tolerate sweets. Fluids by enema, hypodermoclysis or even intravenously are given when patient is dehydrated. An instillation of retention enema, made of potassium bromide grs. xv, chloral grs. x, tr. hyoscyanus minims xv, glucose qs. oz. vi, given every four hours is a valuable aid to control nervousness and I feel sure that only an exceptional patient will require emptying of the uterus and in practically every instance where the above treatment failed a dead foetus or a mole was found in the uterus in the cases coming under my observation.

To conserve time I will consider Pre-Eclampsia and Eclampsia jointly, the treatment of the former being essentially the prophylactic treatment of the latter.

Etiology—As one gleans the literature he becomes bewildered and perplexed by the array of information. Suffice to say, we know very little of its cause. Mentioning the more plausible theories, faulty carbohydrate metabolism, decreased CO_2 combining power, increased acids, both uric and lactic, excess proteins and fats in diet and cold weather are undoubtedly causative factors.

For the past several years we have treated more cases during February and March than any other month, due, I believe, to the fact that in the rural districts the fresh meat is largely pork. During the winter, sausage for breakfast, roast pork for dinner and salt pork and gravy for supper. Our pregnant patient fails to metabolize the proteid and fat excess.

Symptoms—Headache, rise in blood pressure (pulse pressure should be at least one-half of the diastolic pressure) decreased urinary excretion, especially diminished day 12 hour amount (which should be three times the night 12 hour amount) should suggest the seriousness of toxemia. Other symptoms, such as edema, epigastric pain and muscle twitchings are indicative of more pronounced toxemia.

Treatment of Eclampsia—Give morphine sulphate grs. ½ hypo. This raises the CO_2 combining power from 55% to 70% volume and has a tendency to combat acidosis. Correct the deficiency of carbohydrate metabolism by intravenous instillation of glucose, starting with one gram per K.G. body weight. The average patient weighs 50 to 75 K.G. so the initial dose should not exceed 75 grams and subsequent doses not exceed 50 grams. We use the commercially prepared 20 c.c. ampules of sterile 50% solution, 10 grams in 20 of water. Inject the solution slowly, 4 c.c. per minute, solution to be kept warm. The intravenous use of 6-40 grains of soda bicarbonate solution may be added to elevate the CO_2 combining power.

Polac suggests venesection if systolic blood pressure exceeds 150 and replace with 500 c.c.s of 10% glucose solution. In cases where convulsion recurs give 150 c.c.'s of 25% magnesium sulphate solution to relieve cerebral edema.

In the more toxic cases, cesarean section gives exceedingly good results. We use spinal analgesia, Pitkin's solution. In less desperate cases, institute labor with bougie. The use of inhalation anesthesia and pituitrin is not contraindicated.

NEPHRITIC TOXEMIA

When possible the diagnosis between Nephritic Toxemia and Eclampsia should be made so that we may advise our patient wisely as regards subsequent pregnancies, only at great risk in the former, O.K. in the latter, as one attack of eclampsia confers a relative immunity as regards subsequent attacks. Diastolic pressure above 90 with a trace of albumen in the urine with retinitis and a slow convalescence with evidence of slow repair of kidney damage suggests that the kidneys are at fault and that we are dealing with a nephritic toxemia rather than eclampsia.

Puerperal Septicemia, the second group in importance for our consideration, is to my mind the most baffling and dreaded complication in all obstetrics. It is so frequently found in cases where least expected and in other cases, where one might expect it to develop, because of unavoidable accidents arising, precluding the possibility of most rigid asepsis, rarely do we find

it. Important factors of which we know very little play a major part in this dreadful malady. I personally feel that individual resistance is the strongest factor from a prophylactic viewpoint and it is in this field where progress in preventive medicine offers a hopeful future. Have we not all observed a parturient woman delivered safely at home under the most unfavorable circumstances, among infecting organisms to which she is accustomed and has acquired an immunity, while another woman, equally as good a risk, is moved to surroundings apparently more favorable for her confinement and much to our surprise and dismay encounters a virulent infection. Infecting organisms are ever with us, dust particles in the air carry these organisms. DeLee informs us that staphylococcus and streptococcus germs live eighteen hours to ten days in diffuse daylight. Modern asepsis, with sterile drapings, masks and gloves and antiseptic solutions help and we encourage the use of all. But remember that a sneeze may scatter organisms that ten days later will find their way into a gaping vagina or an open wound. Not infrequently, a nurse or physician may carry the organisms which do the mischief and there are so many plausible avenues of infection, such as self-made examination, douching or even intercourse after the onset of labor.

We believe that in many instances the patient herself carries the organism which, due to conditions made favorable for its activity incident to the delivery, such as loss of blood, fatigue, loss of sleep, etc., may be the causative factor. Our teachers have emphasized the importance of sterility to a point where even the laity believe that when blood poisoning occurs, the doctor is to blame; he, in turn, may be able to pass the buck to a nurse, and it's likely to be all unjust. We should do all we can to avoid contaminating our patient. Make rectal examination only as a routine, teach our helper the importance of asepsis, but don't let us take all the blame unless we deserve it.

We know that puerperal sepsis may be caused by any one of twenty infecting organisms, even as many as fifteen organisms have been isolated in a single case of infection. Of the streptococcus, the hemolytic and non hemolytic, pyogenes, viridans, anaerobic, etc. The staphylococcus aureus, albus and some hemolytic. The bacillus coli, bacillus pneumoniae of Friedlander, B. influenzae, diplococcus lanceolatus, pneumoniae and gonococcia are all common infecting organisms. Any one organism may produce different forms of puerperal disease and in differing degrees of severity.

Secondly, we may isolate germs from the lochia, which may in no way be a factor in the morbid process. Thirdly, we may never find the organism which is causing the worst symptom.

Treatment—Fresh air, sunshine, rest and suitable diet. Dilute the toxins with fluids,—proctoclysis, hyperdomoclysis and intravenous sterile salt and glucose solutions. Remove the stitches to allow drainage and put boric and alcohol packs to the vulva. Evacuation of pus when present. The consensus of opinion is that the intravenous use of mercurochrome and metaphen is without benefit and may do harm. The value of antistreptococcic serum is questionable.

ACCIDENTS OF PREGNANCY

The third group, accounting for the greatest mortality or 141 deaths, is classified under the heading of Accidents of Pregnancy.

By far the most important cause under this heading is hemorrhage. For convenience, I classify hemorrhage as ante partum, intra partum, and postpartum.

In the first group we mention abortion and ectopic gestation, the latter causing death in approximately three instances each year. Early diagnosis and surgical treatment as early as possible, consistent with safety is to be desired. Suspect every woman who during child bearing period skips a menstrual period, followed in a week or ten days by irregular or constant bleeding and if this is complicated by pain on either side in lower abdomen, rule out ectopic before considering conservative treatment. (In 190 cases Moller found irregular bleeding in 91% of cases and abdominal pain in 93%.) Confirm diagnosis by bimanual palpation.

Abortions—Approximately the same number of women die annually from abortion as from ectopic gestation. Packing the vagina with sterile gauze and giving quinine and pituitrin to cut down bleeding time, will, I believe, lessen the amount of blood loss. The early removal of remnants of conception usually will take care of subsequent bleeding. Suspect submucous fibroid if bleeding is incessant after removal of membranes.

Placenta Praevia—either ante partum or at term (usually in third trimester or at term) is the most important cause of hemorrhage and death.

When the diagnosis of placenta praevia is established, the patient should be placed in a hospital where adequate means are at hand to take care of any emergency. With the occurrence of bleeding, a sterile pack or a colpeurynter bag is employed to furnish pressure on the bleeding surface until the cervix is dilated. Then a podalic version is the best treatment in marginal, and Caesarean Section in partial or complete or where bleeding is profuse and cervix is undilated. It is never advisable to do an "Accouchement Force" in the face of an undilated cervix. The danger of post partum bleeding is too great, due to invasion of placenta into and weakening of lower walls.

Kellogg at the Boston Lying-In Hospital, reports maternal mortality in 151 cases by con-

servative treatment was 8.25% as against 19% in 152 cases delivered by manual dilatation. The foetal mortality is about 50%. DeLee states that if statistics tell anything, they say positively that cesarean section is the proper treatment of placenta praevia.

THE IMPORTANCE OF VITAL STATISTICS*

BY CHARLES F. DALTON, M.D.†

A PHYSICIAN who practices medicine, assumes among the other duties the responsibility of doing the paper work of his profession in exactly the same way as he undertakes to treat his patient. The filing of birth and death certificates is looked upon by many physicians as an irksome regulation gotten up by boards of health for their own satisfaction; consequently to be done with the least possible trouble and only in a way to comply with the law. Actually, this service is oftentimes as important to the patient as the immediate treatment of disease.

The birth certificate, for example, is becoming of more and more importance as the years pass. In many states, a copy of a birth certificate is required before a child can leave school and begin work; when a person goes abroad he must have his birth certificate before he can obtain his passports; it establishes legitimacy and legal age in transference of property and legacies; it shows legal age for marriage, and in many other ways it becomes a subject of extreme importance. Conversely, its absence is a source of most annoying difficulties.

Probably few physicians understand the route which these records take after they leave his hand. In Vermont, this route is as follows: The birth certificate must be filed with the town or city clerk within ten days of the time of birth. The town clerk is required to make a certified copy of the certificate and send it to the state board of health. There it is reviewed for corrections and omissions and becomes a part of the records and vital statistics of the state. At the end of the current year, all these copies are sent to the Secretary of State at Montpelier where they are finally filed, being indexed by the name and cross-indexed by towns. There they remain for reference in years to come.

While these certificates are in the office of the State Board of Health they are again copied and sent to the Census Bureau at Washington, where they are again reviewed and tabulated and included in the statistics of the nation. As a final move, the important items are sent to the League of Nations at Geneva, and become a part of the international records. It will thus be seen that the birth certificate filed by the physician is a matter of importance not only to the patient, but also to the town, the state, the nation and the world.

For two years the State Board of Health has been sending to mothers "acknowledgments of birth certificates", in an effort to stimulate registration and obtain accuracy in the records, and it was with surprise and dismay that the number of errors became apparent. These errors occur in every item: the name of the child, the sex, the date of birth, the maiden name of mother, the number of children of mother and in fact every item recorded. About ten per cent. of the certificates received require correction in one or more particulars. This difficulty is complicated by the ruling of the attorney general to the effect that when once a certificate is filed it becomes a legal record and can be changed only by order of the court, except in some cases of omissions (as the name of the child) specified in the law. Consequently when mistakes are made, it is necessary to make out a supplementary certificate or a sworn affidavit to be attached to the original showing the corrections. It is therefore of the utmost importance that these be made accurate in the original.

The death certificate is required to be filed within 36 hours after the death and delay is not usually complained of by the clerks, because a burial permit cannot be issued until a proper death certificate has been filed. These certificates go through the same route as the birth certificates and are the subject of many corrections, due to inaccurate reporting, incorrect information or omission of necessary data. While much correspondence is needed to get the personal information correct, it is with the second column or "medical certificate of death" that most trouble is experienced. This is not the place to take up the matter of classification of causes of death, except to say that a uniform method is now in use following the "International Classification of Causes of Death", the last revision of which contains 209 titles.

Much of the difficulty lies in the fact that the town clerk is unable to read the doctor's hand writing. He has no medical training and usually no reference book to look up the terms used so that often a cause of death which may seem perfectly simple to the physician is absolutely beyond the understanding of the town clerk. It follows, then, since a certified copy is necessary, that the clerk makes lines to look as nearly as possible like the doctor's writing and in consequence, when the copy arrives at the office of the State Board of Health, it may not only have no words but not even letters. This is the reason why so many inquiries are sent out regarding this item, and physicians are urged to use

*Read before each County Medical Society, March, 1929.

†For record and address of author see "This Week's Issue," page 1113.

the typewriter in making their certificates, or at least take pains to make their handwriting legible. The purpose of this paper in the symposium on maternal and infant welfare is to make a plea for accuracy and promptness in the recording of vital statistics.

REDUCTION OF INFANT MORTALITY*

BY CHARLES K. JOHNSON, M.D.†

THE infant mortality for the state of Vermont at the present time is one not to be ashamed of. I do feel however that with continued co-öperation the rate can be made lower. In 1905 the infant mortality was 170. That is that of 1000 living births 170 of these infants died before a year of age. In 1927, the last figures available, the rate was 70. The death rate from gastro-intestinal disturbances has been markedly lowered, in fact herein lies the largest single factor in the present reduction. The factors that have not been lowered to a great extent pertain more especially to prenatal and natal care.

While there are many points for attack in this problem I will confine my remarks more especially to prenatal and natal care and to breast feeding. It is an infant's right to be born healthy. It has been well said: that being an infant is a hazardous occupation. This hazard from the viewpoint of the infant begins at conception. Will it be a miscarriage, a still birth, a premature infant or a congenitally weak infant, or again will the infant due to some birth injury go through life with a physical or mental handicap whereby it cannot compete with conditions encountered?

First it will be well to consider prenatal care. You as physicians should educate your clientele so that the expectant mothers will consult you early in pregnancy. Here is your opportunity to direct her diet, exercise, clothing, etc. The diet of the expectant mother is very important to the forthcoming infant. A well-balanced diet with due care as to sufficient milk, meat, cereals, fruits and vegetables reflects itself in the infant's bones, teeth, musculature and general well-being. A little care as to the use of tight clothing and an examination of the breasts may prevent or improve malformed nipples with a result of a breast fed infant instead of one on a bottle. Blood pressure observations and frequent examination of urine will prevent many nephritic toxemias.

As to natal care it has been said by many eminent obstetricians, that the majority of infants will be born normally if one waits a reasonable time before interfering with nature. The important point being: when is one justified in such interference? It is not my purpose to criticise the obstetrician or general practitioner but simply to remind you that to a certain extent you are responsible for the future well-being of the new born infant. It has been generally held that brain hemorrhage in the new born infant was most frequently due to the use of forceps but I believe the general opinion of today is that this is only one factor. In fact the judicious use of forceps may be the thing that prevents hemorrhage by not allowing hard pains to continue over too long a period. Many infants die 24 to 48 hours after birth and one is at a loss to give any specific cause for the death. Autopsies upon these infants show at least 65% to have brain hemorrhage to some extent. Patience and good judgment at the time of child birth may mean much to the infant's future. A so-called congenitally weak infant must be classed with the premature infant as far as its chances of living are concerned. You are all familiar with the condition called hemorrhagic disease of the new born. Here again the present method of using whole blood either by direct transfusion or by intra-muscular injection has decidedly lessened the mortality from this condition.

All new-born infants are entitled to breast feeding whenever possible. I believe that most mothers wish to nurse their infants, and it has been well shown by Sedgwick, Richardson and others what may be accomplished. Sedgwick with 2847 infants under observation at two months, 96% were on the breast and of this group with 2022 still under observation at nine months 72 per cent. were breast fed. One should let the mother rest a few hours after child birth then put the infant to each breast for one or two minutes at regular intervals, the time at the breast gradually increasing. It is not expected that the infant will secure much nourishment at this time but it will become accustomed to nursing and the nipples will be less apt to become tender and cracked with a resultant weaning. The nursing stimulates uterine contractions at a time when this is most desirable. By the third day it is advisable to get the infant on a schedule one is to follow. This early training is of the utmost importance to the infant and its mother in the following weeks. If by the fifth day the infant has lost more than 1/10 of its birth weight or is running a temperature, presumably from lack of food one should supply additional food. This is termed mixed feeding and may be supplied in two ways. First, complemental feeding, or the giving of a bottle directly after each breast feeding. Second by the so-called supplemental or better, substitute feeding. Here one replaces one or more breast feeding entirely by a bottle feeding. The first

*Read before each County Medical Society, March, 1929.

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method is the one of choice when it is desired to keep the infant at the breast. This should be our endeavor whenever possible. When the second method is used as it too frequently is the breasts are apt to become inactive for want of stimulation and the baby is soon entirely artificially fed. If one wishes to be scientific he can weigh the infant before and after nursings for a whole day period and then estimate the calories received and compare with the infant's caloric requirement as determined by its weight and then supply enough food to make up the deficiency.

For practical purposes however one may give the infant sufficient at the breast to empty it and then offer a weak formula directly afterward. The weight, stools and general condition are watched and the formula increased as seems advisable. In many cases we find that after a few days when the mother's mental and physical condition is improved that she has sufficient milk and the bottle is not required. Again I have had many infants continue for months with the complemental method, eventually the bottle feeding being increased as the breasts fail and the infant is weaned with but little chance of being upset. I will not attempt at this time to venture into the field of artificial feeding except to state that cow's milk is the food of choice and that the majority of infants will do well on simple easily prepared formulas.

Before closing my remarks I would be remiss if I did not speak of two other conditions. I refer to vaccination against smallpox and the use of toxin-antitoxin to prevent diphtheria. Every infant should have been vaccinated and have received toxin-antitoxin before its first birth day. Nearly all infants are susceptible to diphtheria at one year of age and a Schick test may be omitted.

These diseases are practically always preventable and we as physicians are not doing our full duty if this immunization is not at least suggested to the parents. In fact in these days of general interest in preventive medicine if we do not advocate these measures the mothers are going to insist upon them.

MISCELLANY

VERMONT DEPARTMENT OF PUBLIC HEALTH

APRIL, 1929

Report of communicable diseases: Chickenpox, 37; diphtheria, 9; measles, 54; mumps, 152; scarlet fever, 56; smallpox, 31; tuberculosis, 12; whooping cough, 143.

The Laboratory of Hygiene makes the following report:

Examinations:

For diphtheria bacilli	336
For Widal reaction of typhoid fever	28
For malarial parasites	0
For tubercle bacilli	214
For evidence of syphilis	352
For gonococci in pus	122
Of blood for contagious abortion in cattle	35
Of water, chemical and bacteriological	64
Of water, bacteriological	109
Of milk, market	81
Of milk, submitted for chemical only	4
Of milk, submitted by Department of Agriculture for added water	1
Of foods	27
Of drugs	0
For the courts, autopsies	1
For the courts, miscellaneous	15
Autopsies to complete death returns	2
Miscellaneous examinations	64

The Division of Venereal Diseases makes the following report: 32 cases of gonorrhea reported during the month, 24 cases of syphilis, 2 cases reporting for intravenous treatment; 178 gonorrhea outfits were distributed and 318 Wassermann outfits.

The Tuberculosis Division reports as follows: 10,000 copies of the *Modern Health Crusader* published and distributed. The director talked to students of high schools in several towns of the state.

Report of the Poliomyelitis After-care: 78 patients seen, 58 home visits made, 22 orthopedic corrections made, 10 pieces of apparatus altered or repaired, 4 plaster casts removed, 2 patients admitted to hospitals and 6 patients discharged from hospitals. The vocational worker reports 11 patients seen, 8 home visits made, and sales amounting to $31.60 were realized.

Report of the Maternity and Infancy Division: The course on "Child Care" has been conducted in high schools in five towns. Also talks and demonstrations have been given to mothers and teachers in various towns.

Dr. A. C. Walker of South Londonderry has moved to Springfield, where he has opened an office.

NEW MEMBERS

The following men have joined the Vermont State Medical Society: Dr. L. R. Goodrich, Burlington; Dr. Robert J. Catlin, 32½ Canada Street, Swanton; Dr. Benjamin Franklin Cook, Rutland; and Dr. A. B. Soule, Jr., Burlington.

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 15211

DYSPNEA AND CHEST PAIN

MEDICAL DEPARTMENT

A married Russian Jewess fifty-five years old came to the Emergency Ward October 18. She was unable to give any history herself.

Three years before admission while walking on a cold night she had an attack of substernal pain. She had no other attacks until the summer before admission, when she had a number. At first they were always brought on by exertion. Later they came on when she was in bed. All except the last two or three attacks had been relieved by nitroglycerin. She had been using three pillows at night for several months. Four weeks before admission her blood pressure at the Out-Patient Department of another hospital was found to be 170. The last attack, two weeks before admission, was quite severe. Nitroglycerin was ineffectual. One hypodermic injection put her to sleep. After two or three days in bed she was up and about. A week before admission she began to have cough. The present attack began at 1:30 the morning of admission, when she awoke with a sensation of nausea and an intense desire to defecate. She was unable to vomit. She was extremely dizzy. Her physician gave her a hypodermic. In the afternoon her breathing was a little labored.

Clinical examination showed an obese woman propped up in bed drowsy and dyspneic, with loose cough, moderate cyanosis of the lips and cold perspiration. The neck vessels were slightly distended. There were coarse crackles in both axillae and coarse moist râles throughout both backs. The point of maximum intensity of the heart beat was felt but not seen two centimeters outside the midclavicular line. Percussion was inaccurate. The left border of dullness was located in the fifth space 10 centimeters to the left of midsternum, 2 centimeters outside the midclavicular line, the right border 2.5 centimeters to the right, the supracardiac dullness 5.5 centimeters. The heart sounds were very faint and of poor quality, barely audible at the base. There was occasional gallop rhythm. A systolic murmur was heard at the apex. The pulse was poor. The peripheral vessels were possibly moderately sclerotic. Blood pressure 163/110 to 100/70. Abdomen very obese and tympanitic. Slight dullness in the left flank. Palpation impossible because of position and the patient's condition. Considerable distention. Very slight pitting edema over the shins. Pupils contracted. The right reacted slightly to light. The left did not react. Knee-jerks equal but sluggish. No Babinski or clonus.

Urine not recorded. Blood: 14,400 to 16,400 leukocytes, hemoglobin 85 per cent, reds 3,640,000, polymorphonuclears 83.5 per cent. Smear normal. Hinton negative. Non-protein nitrogen 55.

Temperature 99° to 101°. Pulse 92 to 120. Respirations 20 to 36.

The patient entered the Emergency Ward at 6:00 p. m. She was taken to the medical ward. An hour later an enema was given without results. At half past eight the systolic blood pressure was 120. Half an hour later the blood pressure had fallen to 80/60 and the pulse was very poor. After caffein and adrenalin the pulse improved and the blood pressure rose to 90/60. The following day it was recorded as high as 160 systolic. At three in the afternoon it was 140/80. The râles were increasing. Pinkish foam exuded from the mouth. There was moderate cyanosis of the lips. Râles in the chest obscured the heart sounds. October 20 the sounds were inaudible because of congestion of the lungs. The blood pressure was sustained between 120 and 150 until six o'clock in the morning, then gradually fell to collapse level. Cyanosis was remarkably moderate until an hour or two before death. At noon she suddenly became very cyanotic and died.

DISCUSSION

BY RICHARD C. CABOT, M. D.

DIFFERENTIAL DIAGNOSIS

The early history leaves us nothing else that we can say except angina pectoris until we come to that one attack not relieved by nitroglycerin, which I suspect lasted longer than an attack has a right to last and still be called angina pectoris. We suspect, in other words, that cardiac infarction took place at that time. The line between angina pectoris and infarction is drawn chiefly on the duration of pain, minutes in angina, hours in cardiac infarction. It depends too on the conditions under which it comes on, exertion or emotion for angina pectoris, often when quiet in bed for infarction. It depends on the situation of the pain, which is often epigastric in infarction, so that surgical operations are often done for supposed perforative peritonitis. and on the accompanying signs of poor heart action which one sees rarely in simple angina and often with infarction,—such signs as fainting and poor pulse. We have here a little more than typical angina, not so much as clear infarction, until we get to the record of the stay in the hospital,

where nothing is said about pain, but we are obviously dealing with a failing heart.

Before that we have evidence of two other points, hypertension and an anemia not accounted for by any of the coronary or heart lesions mentioned. They make me suspicious of chronic nephritis. It is the type of case in which a vascular nephritis is common. The non-protein nitrogen is somewhat high, and in the absence of any other thing to account for such an anemia it seems to me that the guess of chronic vascular nephritis is justified. That is the only direct evidence we have bearing on the function of the kidney. What exactly was the condition of the heart and the circulation at the end of life I do not know. I can easily imagine a pulmonary embolus with the terminal cyanosis, but there is nothing to compel us to say that. It may have been heart failure with nothing to show for it except the hypertrophy and dilatation which the previous history leads us to suspect. It may have been a rupture of the ventricle. It may have been fresh infarct without pain. We have had several cases of that type in these exercises. It seems to me it is safer to say there are old infarcts in this case with or without a new one, that there are coronary lesions of the kind we expect with infarct, and hypertrophy and dilatation, chronic vascular nephritis and general passive congestion.

The only other thing we need mention is the possibility of tabes. The pupils and knee-jerks are not normal, but we can easily account for that by supposing that she had had morphia, which is more than possible in view of such an attack as that which brought her here. We have not evidence enough to do more than mention the possibility of tabes.

The slight leukocytosis reported in the blood examination would go perfectly well with a fresh infarct. There were no grounds for supposing a pneumonia, although this is the sort of case in which pneumonia is very common. She was here only a short time, so the chart does not stand for much. It is consistent with infarction or with the absence of infarction.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Arteriosclerosis, general.
Arteriosclerotic heart disease.
Angina pectoris.
Coronary occlusion.

DR. RICHARD C. CABOT'S DIAGNOSIS

Old infarcts of the heart, with or without a new one.
Coronary occlusion.
Hypertrophy and dilatation of the heart.
Chronic vascular nephritis.
Chronic passive congestion, general.

ANATOMIC DIAGNOSES

Coronary sclerosis.
Cardiac infarction, old, healed.
Cardiac infarction, recent.

DR. TRACY B. MALLORY: Our post-mortem examination was limited entirely to the heart in this case. It was hypertrophied and weighed 460 grams. It showed marked coronary sclerosis, particularly in the left artery, which showed atheromatous thickening and calcification marked enough to obliterate the vessel almost completely. We were not able to demonstrate any fresh thrombus. There was some narrowing of the right coronary, but not to the point of obliteration. There were two infarcts present, one along the lateral surface of the left ventricle near the apex, evidently of a few weeks' duration, as there was marked thinning of the wall. The muscle had almost entirely disappeared; there was very little left but fibrous tissue with some calcification. There was a second and quite fresh infarction occupying the interventricular septum and the adjacent portions of both right and left ventricles. Here the muscle tissue was yellowish, entirely opaque, quite soft, evidently very freshly necrotic, probably a matter of two or three days. It checks very well with the clinical history in each case.

DR. CABOT: We shall never know whether my guess about the cause of the secondary anemia, nephritis, is true. But I suppose there is nothing in the case to make us think to the contrary, is there?

DR. MALLORY: No.

DR. CABOT: What was the clinical diagnosis, Miss Painter?

MISS PAINTER: Arteriosclerosis, general, arteriosclerotic heart, angina pectoris, coronary occlusion.

DR. CABOT: There was nothing about the kidney. It would have been a pretty dangerous thing to put down nephritis when there was no examination of the urine. There may perfectly well have been in the abdominal cavity something else to account for the anemia.

The thing that always strikes me afresh in these cases of infarct is the question what we used to call them twenty years ago. If you go back in the records here or in other hospitals you do not find any diagnosis of infarct of the heart. I suppose they are not any commoner than they used to be. Do you know what they used to call them?

DR. MALLORY: I have no idea.

DR. CABOT: It is like appendicitis and alcoholic neuritis, ancient diseases which nevertheless nobody used to see. It is even harder to explain with a thing like infarct. Are they very easy to see?

DR. MALLORY: Yes. It would be impossible for even a moderately experienced pathologist to miss one, except when death occurs so quickly that retrograde changes do not have time to occur.

DR. CABOT: In going over the old pathological records we find plenty of cases of chronic myocarditis produced by the first infarct, but almost none of a fresh one.

CASE 15212

MENTAL DISTURBANCE WITH DESQUAMATING SKIN LESIONS

Neurological Department

A married American woman forty-two years old entered June 28. The chief complaints were mental disturbance and loss of speech. The history was given by her husband, who was unintelligent, and was recorded by a foreigner who had language difficulty.

The patient seemed well until June 23, when she went to bed early. The following morning she was mentally confused, could not talk, and took very small steps in walking. Since that time she had grown steadily worse, eating little and taking much fluid. Since June 25 she had been in bed. She had had no headache, blurring of vision or vomiting. She seemed to recognize people. Her mental condition had grown steadily worse. Since January she had had desquamating skin lesions on the hands resembling those caused by severely scalding her face a month earlier. After peeling the hands became worse and peeled again. She complained of burning pain in the lesions.

Her past history is unimportant.

Clinical examination showed a thin, haggard woman, not comatose, but showing marked symptoms of mental deterioration. She played childishly with her hands and struggled obstinately during the examination. She understood questions and tried to answer, but was almost aphonic. With considerable effort she could whisper a word or two. Skin very dry, with desquamation on the cheeks, nose and hands. The latter were badly affected, red, without epidermis in several places and with scabs between the fingers, the lesions making a gauntlet. Lips dry and fissured. Tongue covered with a dark formation as if from extreme dehydration. Throat and tongue showed a thick creamy secretion. Heart, lungs, abdomen and extremities normal. Blood pressure 100/62. A consulting oculist reported the discs normal. There were scattered patches with old choroiditis at the periphery of each fundus. Arm jerks lively. Abdominal reflexes not obtained. Knee jerks normal. Ankle jerks rather poor. Gait and Romberg not tried.

Urine not recorded. Blood: 8,900 leukocytes, 80 per cent hemoglobin, 4,400,000 reds. Wassermann negative. Hinton weakly positive.

Temperature 99.9° to 102.1°. Pulse 63 to 97. Respirations normal.

Early in the morning on June 30 the patient died.

Discussion

by richard c. cabot, m.d.

NOTES ON THE HISTORY

The patient could not speak, the person giving the history was unintelligent and the person recording it did not understand the language. So we will not bear too heavily on the history.

When taking those very small steps she must have feared loss of balance and probably had a feeling of dizziness.

I think it is very hard to make any diagnosis on the hands in this case. Very likely they are important. Perhaps we shall find more about them in the physical examination. These lesions apparently had no connection with that burn she had on the face.

NOTES ON THE PHYSICAL EXAMINATION

What is the difference between aphonia and aphasia? Was she aphonic or was she aphasic? Aphonia is loss of voice and aphasia is loss of power of speech. If you have a bad sore throat and cannot talk you are aphonic but not aphasic. You cannot make a noise, but not because there is anything wrong with the mental processes. Aphasia means that there is nothing the matter with the speaking apparatus, but that the processes of the brain preceding speech do not go right. There is no paralysis there and no inflammation. I do not know whether this patient is aphasic or aphonic; I guess aphasic. Nothing is said about the speech apparatus as such.

There is nothing said about the reflexes to clear up this brain condition that we are studying.

If that oculist's report has any particular relation to internal medicine I do not know it.

DIFFERENTIAL DIAGNOSIS

I think there is a very poor chance of getting the right diagnosis, and I do not feel at all optimistic about my own success. We lack some very important data, the chief of which is the urine examination. The symptoms could not be all due to nephritis, but many could, in spite of the low blood pressure. A person can die of uremia with this clinical picture; but on the whole it does not seem as much like this as it does like other things.

We have to think over the brain diseases. The brain is what we are primarily interested in. There is nothing there to make us think of the spinal cord or peripheral nerves. There is nothing to make us think of the internal organs or of the blood. There are skin lesions which I am unable to interpret with certainty. There is apparently some brain lesion, and that is all. She certainly could not die of those skin lesions; so the most important lesion must have been in the brain and she must have died of a brain lesion. What is it? Can it be the ordinary vascular brain lesion which shows itself in hemorrhage or softening following occlusion of an artery? I think not, though we ought to think of that first because it is the commonest. I do not believe she had cerebral hemorrhage or softening or any of the things that can result from vascular lesions. It is possible. It cannot be ruled out, because it may have been in some of the "silent" areas. I do not see how it could be in the region of the

center of speech, the third left frontal convolution, because she in all probability would have had some paralysis also. Very rarely is a lesion causing aphasia confined to the speech center. It might have been in any of the silent areas of the brain without producing paralysis, but if it caused death it must have caused an increase of intracranial pressure. Most people who die of paralysis show signs of pressure and many show changes in the fundi and complete unconsciousness. I do not see how we can say she died of any lesion that causes pressure, such as brain tumor or cerebral hemorrhage, even if it was in a silent area which does not cause paralysis.

Secondly we have to consider cerebral syphilis of some one of the different types. Could it be dementia paralytica, paresis? Not if the history is right. Paresis cannot come on in five days, and a six months' history of skin lesions has nothing to do with paresis. One thing we notably lack is a spinal fluid examination, which probably would have settled that question. I do not know why they did not do that in two days. It seems as if they might. The other common forms of syphilis, the vascular forms, give essentially the same signs as those of the non-syphilitic vascular lesions which I have already dealt with as well as I can.

What have we left? Meningitis. What form? Either tuberculous or septic (suppurative). I do not know that they can be ruled out. There is evidence that she had fever before she came here, not very good evidence, but suggestive because of her tongue and her extreme thirst. We are looking for an inflammatory lesion, but there is very little to suggest it. Meningitis of the ordinary type usually produces intense headache, increasing and profound coma, and more changes in the fundi than she has shown, as well as a stiff neck and other evidences of muscular spasm which are entirely absent here. Tuberculous meningitis does the same thing, but much more slowly, and ordinarily causes changes in the cranial nerves. Squint is the commonest. There is nothing said about eye abnormalities of that type. I cannot exclude meningitis, and although it is suggested that this seems to be an infectious lesion, if we can take fever to suggest that, I do not think we can say it is meningitis.

Can we say that it is sleeping sickness? This was a much quicker death than I have ever heard of in encephalitis lethargica. She may have been sick longer. We always look for double vision and cranial nerve symptoms which are not present here. Secondary to that we are looking for choreiform movements of the hands, or spasm, or later the Parkinsonian syndrome, paralysis agitans, none of which is at all suggested here.

Poliomyelitis can be ruled out because we would not make that diagnosis without evidence of paralysis, and there is none here. I do not say that it cannot exist without it, but it cannot be diagnosed without it.

Cerebral abscess would explain the fever, but we cannot diagnose cerebral abscess unless we have on the one hand some evidence where it has come from, from the lung or in the ear, or some evidence of local interference with function comparable to that which cerebral tumor gives. If she had cerebral abscess or tumor we cannot say so because of the absence of the two groups of symptoms—focal and pressure symptoms.

Did she die of some form of pure "mental disease?" People who die of dementia precox generally have a tangible complication with evidence of pneumonia or something of that kind which we have not got here. The psychosis might be dementia praecox or paralytica, but we cannot diagnose either of these as causing death without some physical symptoms which I do not see.

Lead poisoning can cause a good many of these symptoms, including coma and death. But we certainly ought to have picked it up in the blood. It is the easiest thing in the world to show in the blood if it causes death. There is nothing in the history to suggest it. It can be ruled out.

Could alcohol do this thing? Certainly not acute alcoholism; and we have no history of chronic alcoholism.

Could morphia do it? I do not think there is a chance of it.

I have gone through all the cerebral lesions I can think of. It does not seem like any of them, and that is the best diagnosis I can make.

A STUDENT: Pellagra?

DR. CABOT: Of course the skin lesions make you think of that disease. The other thing we are always looking for is something in the mouth and the gastro-intestinal tract generally. A large book could be written about what I do not know about pellagra. Anybody who lives here sees so few cases that he cannot speak with any confidence about pellagra. The skin lesions as described do not suggest it to me except by their situation. Dr. Mallory, is the description at post mortem like what I read here?

DR. TRACY B. MALLORY: Yes, I think so.

DR. CABOT: Of course pellagra has all three of the things that are striking here, the mental as well as the skin lesions and the gastro-intestinal symptoms. We are not told much about the condition of the mouth. We do not know anything about her diet, do we, Miss Painter?

MISS PAINTER: No, Dr. Cabot.

DR. CABOT: I think the current theory, pretty well supported, that pellagra is due to deficiency in diet should make us look for that cause. We have no evidence of that kind. I do not know anything about the immediate cause of death in pellagra. She was very thin and haggard looking. Perhaps she was worn out with the disease enough to say that that could cause her death without anything further. The skin was very dry. I do not think I can go any farther. There are probably enough facts to make a reasonable

diagnosis of pellagra. I do not think there are enough facts known to me, but that probably is my fault.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Pellagra.

DR. RICHARD C. CABOT'S DIAGNOSIS

No diagnosis made.

ANATOMIC DIAGNOSIS

Pellagra.

DR. MALLORY: The case was in all probability one of pellagra. We see here about one or two cases a year. This is the only one in the past year, so I decided to present it in spite of the inadequate clinical evidence. The diagnosis depends in most instances on the appearance of the skin lesions, and as in all dermatological conditions what can be instantaneously recognized by eye may be almost impossible to describe so that a second person can recognize the picture.

DR. CABOT: Can you say any more about how they looked?

DR. MALLORY: There was symmetrical deep brown pigmentation and a typical sharp border to the lesions just at the upper limit of each wrist. There was not the pigmentation of the ankles which is present in many of the cases. There was more desquamation than is often the case. She also had essentially similar lesions, which I feel quite sure were part of the process, at each corner of the mouth.

The other autopsy findings were only an old fibrous pleuritis and some hyperplasia of and a few small abscesses in the lymphoid follicles of the large intestine. That is quite characteristic of pellagra. All the organs were atrophic with the exception of the liver, which showed a fairly marked fatty infiltration. The central nervous system showed histologically fairly widespread but not extremely severe degenerative changes. The ganglion cells showed changes with the Nissl stain, particularly the cells of the anterior horns of the columns of Clarke in the anterior cord and the layer of large pyramidal cells in the motor cortex. There was some degeneration of the posterior columns and of the column of Goll and Burdach as shown with the Weigert stain. The peripheral nerves showed a slight degree of degeneration as well. The findings are entirely consistent histologically with pellagra.

DR. CABOT: Might these same spinal changes have been found in pernicious anemia, or are they largely different?

DR. MALLORY: The changes in the spinal cord are very much the same. The more irregular distribution and the tendency to gliosis in pellagra would probably enable a neuropathologist to distinguish the two lesions.

A STUDENT: How do you account for the presence of knee jerks with sclerosis in the posterior columns?

DR. MALLORY: The degeneration had not gone far enough to affect the reflexes yet.

A STUDENT: What sort of gross changes were found? Was there atrophy of the convolutions?

DR. MALLORY: It was very slight but present.

DR. CABOT: Did you find out what was the immediate cause of death?

DR. MALLORY: I do not know. One very seldom does know in pellagra.

A STUDENT: Did she have diarrhea while she was in the hospital?

DR. MALLORY: I do not believe so. There is no account of it anyhow.

DR. CABOT: Why do we not say exhaustion? We say it is the cause of death in many chronic diseases. She is a haggard, thin woman, so weak that she cannot speak. It seems to me we are not in any more difficulty than we are in many other cases.

Looking back on it now I should say I was wrong in saying it was aphasia, not aphonia. I see now that it was aphonia. She was so weak and tired that she could not use her speaking apparatus. Apparently the brain end of it was good enough.

THE CHILD'S BILL OF RIGHTS

The ideal to which we should strive is that there shall be no child in America:

That has not been born under proper conditions;

That does not live in hygienic surroundings;

That ever suffers from undernourishment;

That does not have prompt and efficient medical attention and inspection;

That does not receive primary instruction in the elements of hygiene and good health;

That has not the complete birthright of a sound mind in a sound body;

That has not the encouragement to express in fullest measure the spirit within which is the final endowment of every human being.—*Herbert Hoover.*

The New England
Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

Established in 1828

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

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SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, Canada $7.04 per year, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 126 Massachusetts Avenue.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The New England Journal of Medicine, 126 Massachusetts Avenue, Boston, Mass.

The Massachusetts Medical Society

THE ANNUAL MEETING

THE annual meeting of the Massachusetts Medical Society, which this year will be held in the Copley-Plaza Hotel, Boston, on Monday, Tuesday and Wednesday, June 10, 11 and 12, bids fair to be of more than ordinary interest. Programs have gone out to all the Fellows and invited guests, a month in advance, according to the terms of the By-Laws. The first day will be devoted to clinics at the various large hospitals of Boston, except for the meetings of two sections at the hotel. The Committee of Arrangements has spent much time in preparing a plan for these clinics and will publish a detailed schedule in the JOURNAL of May 30. Luncheon will be served at some of the hospitals so that the inner man may be satisfied in the intervals between clinics. On Monday evening there will be an informal supper at the Copley-Plaza followed by a vaudeville program. Tuesday will be devoted to meetings of the four remaining Sections, the programs having been carefully arranged by the officers of the Sections. Of the out-of-state readers, two of the Sections are to be favored by papers by Dr. Lewis Gregory Cole of New York City, one of them by a paper by Dr. Martin E. Rehfuss, of Philadelphia on "Newer Studies on the Importance of the Pyloric Motor Mechanism and its Effect on Gastric Disease", another by a paper on "Electrosurgery" by Dr. W. L. Clark of Philadelphia, and yet another by a paper on the toxemias of late pregnancy by Dr. H. J. Stander, of the Johns Hopkins Hospital, Baltimore. The program should be consulted for details of the many other attractive features of the Section meetings. The Council meeting will be held at noon and, in the evening, the annual dinner will be served in the ballroom, followed by the Shattuck Lecture by Dr. William H. Robey. This is an innovation as the annual dinner has been held in the past on Wednesday. With a president going out of office, according to a long established custom, it was thought by the Committee of Arrangements that it might be well to substitute the Shattuck Lecture for after dinner speaking. Following the lecture the Massachusetts Commissioner of Public Health, Dr. Bigelow, will make a short address. On Wednesday comes the annual meeting of the Society itself with the usual business and following that the annual oration by Dr. George Cheever Shattuck on The Interdependence of Tropical Medicine and General Medicine. Motion pictures of medical subjects will close the meeting. The commercial exhibits will occupy the large hall called the "Foyer", on the Trinity Place side of the hotel. A goodly number of exhibitors has been secured and it is hoped that the Fellows and their guests will make much use of this feature of the meeting. Full details will appear in the amended program in the JOURNAL of May 30. It is expected that there will be a large attendance at this annual gathering of the old Society which soon will celebrate its one hundred and fiftieth anniversary.

SPINAL ANAESTHESIA FATALITIES

THE tendency of mankind to take up whatever is novel is a characteristic of doctors as well as of laymen. An excellent illustration of this may be seen in the sudden burst of enthusiasm over the merits of spinal anaesthesia. This method, it is true, is not new, but the discovery of the value of ephedrin as a preventive of vasomotor collapse and the recent work of Pitkin on spinal anaesthesia have served to place this method before the profession in a new and most attractive light. In addition to the renewed interest in this form of anaesthesia which has been developed naturally, there has been an interest artificially stimulated by the commercial firm which has taken over the production of Pitkin's Spinocain. The advantages of the method have been dwelt upon at length, but the dangers incident to its use have been touched upon only very lightly.

As a result of the wide advertisement of the newer methods of inducing spinal anaesthesia, particularly emphasized at the meeting of the Congress of Surgeons in Boston last fall, large quantities of the necessary apparatus and solutions were sold. Many surgeons who had no previous experience with the method and who, it is feared, had little knowledge of the physiological factors involved, proceeded boldly in its use.

The results which might have been expected were not long delayed. Sise, in a most timely paper published elsewhere in this issue of the JOURNAL, records some of these experiences. Eleven deaths directly attributable to the use of spinal anaesthesia and three others probably due to it have occurred within the past year in Greater Boston alone, thus making, according to Sise, a mortality of approximately 1% which can be laid at the door of this method. This, as Sise says, is far too high a cost to pay. Some of the deaths were undoubtedly due to faulty selection of cases, others to errors of technic or to the lack of preparedness in dealing with the vasomotor crisis against which the anesthetist must always be on his guard.

That such a mortality is absolutely unnecessary is proved by the large series of successful cases, running into the thousands, which have been reported by those who have had a large experience with spinal anaesthesia.

Spinal anaesthesia, when properly carried out in well selected cases, may well be considered one of the great advances in surgical technic which this century has contributed. It must be employed with judgment and understanding, or else it will fall into an entirely undeserved disrepute. It is to be hoped that everyone who is interested in its possibilities will read Sise's extremely practical discussion of spinal anaesthesia fatalities and their prevention.

THE CLEVELAND DISASTER

THE world is visited, at all too frequent intervals, by its great catastrophes which make mankind pause for a moment in horror, learn its lesson, perhaps, and continue on its onward course. Theatres burn and consign their audiences to flame or to death in the rush for safety; dams burst and let loose their waters upon sleeping villages; vessels sink mysteriously and carry with them passengers. We accept more or less resignedly the loss of life from hurricanes and tidal waves as acts of God. When wholesale accidents result, directly or indirectly from the acts of man, we have a right to stop and wonder if such things should be; if we are not neglecting, in our haste for accomplishment, some safeguard which human ingenuity should devise for the conditions, devised by human ingenuity, which have brought about the possibility of great danger.

As fellows in the art of healing, we are particularly aghast when the horror strikes as closely to home as the catastrophe in the clinic at Cleveland. Clinics are constructed to relieve suffering, and a note of bitter irony is struck when the temple of hope is converted into the abyss of despair.

The type of disaster which occurred in the Crile clinic is without precedent in hospital history, and fortunately conditions are such that it need never be repeated. Nitro-cellulose films, the use of which is now being largely abandoned, are known to be highly inflammable; in fact, explosive, and in their combustion it is known that the deadly gases nitric oxide, and perhaps carbon monoxide are given off. It may be that these gases caused most of the Cleveland deaths, and there is no remedy for the former. Fortunately the acetate films such as are used in Boston hospitals are devoid of danger. Proper legislation should make their use obligatory. We can but express our regret for those who were lost and our sympathy for those who remain, and our hope that the lightning will strike not too often and not too near.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

SISE, L. F. A.B., M.D. Harvard 1901. Anesthetist, Lahey Clinic. Consulting Anesthetist, New England Deaconess Hospital. Anesthetist, New England Baptist Hospital. Visiting Anesthetist, Lawrence Memorial Hospital of Medford. His subject is: "Spinal Anesthesia Fatalities and Their Prevention." Page 1071. Address: 605 Commonwealth Avenue, Boston.

CHUTE, ARTHUR L. M.D. Harvard 1895. F.A.C.S. Associate Professor, Tufts Medical School. Genito-Urinary Surgeon, St. Elizabeth's Hospital, Brighton. Consulting Urinary Surgeon, Newton Hospital, Newton; Leonard-Morse Hospital, Natick; Somerville Hospital, Somerville. His subject is: "Certain Advantages of the Two-Stage Suprapubic Prostatectomy." Page 1075. Address: 352 Marlboro Street, Boston.

QUINBY, WILLIAM C. A.B., M.D. Harvard 1902. F.A.C.S. Urologist, Peter Bent Brigham Hospital. Clinical Professor of Genito-Urinary Surgery, Harvard Medical School. His subject is: "Prostatectomy." Page 1077. Address: Peter Bent Brigham Hospital, Boston.

OTTENHEIMER, EDWARD J. B.S., M.D. University of Virginia, 1922. Visiting Surgeon, St. Joseph's Hospital, Willimantic, Connecticut. Address: 29 North Street, Willimantic, Connecticut. Associated with him is:

KINNEY, KENNETH. B.S., M.D. University of Iowa, 1921. Roentgenologist, St. Joseph's Hos-

pital, Willimantic, Connecticut. Consulting Roentgenologist to Day Kimball Hospital, Putnam, Connecticut and Westerly Hospital, Westerly, Rhode Island. Address: 29 North Street, Willimantic, Connecticut. Their subject is: "Non-Parasitic Cystic Disease of the Liver. Report of Two Cases." Page 1093.

LOMBARD, HERBERT L. A.B., M.P.H., M.D. Bowdoin College 1915. Chief, Cancer Section, Massachusetts Department of Public Health. Address: State House, Boston. Associated with him is:

GIBLIN, MARIE R. A.B. Boston University C.L.A., 1917. Statistician, Massachusetts Department of Public Health. Address: State House, Boston. Their subject is: "Hospitalization Problem in Wayland." Page 1097.

RICKER, WILLIAM G. M.D. Johns Hopkins 1904. Secretary, Vermont State Medical Society. Member of Vermont State Board of Health. His subject is: "Care of the Eyes in Infancy." Page 1101. Address: St. Johnsbury, Vermont.

EASTMAN, OLIVER N. M.D. University of Vermont College of Medicine, 1908. F.A.C.S. Associate Professor of Obstetrics, University of Vermont College of Medicine. Consulting Gynecologist, Bishop DeGoesbriand and Fanny Allen Hospitals. Assistant Surgeon, Mary Fletcher Hospital. His subject is: "Reduction of Maternal Mortality." Page 1101. Address: 163 South Union Street, Burlington, Vermont.

DALTON, CHARLES F. M.D. University of Vermont, College of Medicine, 1903. Secretary and Executive Officer Vermont Department of Public Health since 1912. Professor of Hygiene and Preventive Medicine University of Vermont College of Medicine. Formerly President, Conference of State and Provincial Health Authorities of North America. President, Vermont State Medical Society. His subject is: "The Importance of Vital Statistics." Page 1104. Address: Burlington, Vermont.

JOHNSON, C. K. M.D. University of Vermont 1899. Professor of Pediatrics, University of Vermont. Pediatrician to The Mary Fletcher Hospital, The Bishop DeGoesbriand Hospital and The Fanny Allen Hospital. His subject is: "Reduction of Infant Mortality." Page 1105. Address: 311 South Union Street, Burlington, Vermont.

MISCELLANY

ACCIDENTS IN THE UNITED STATES

EXCERPTS FROM AN ADDRESS OF ROBERT P. LAMONT, SECRETARY OF COMMERCE

There are 10,000,000 accidents in the United States each year, fatal, serious or otherwise, fatal accidents alone running close to 95,000. One person out of every 12 is injured or killed through accidental causes every year.

It is reliably estimated that the cash value of human sacrifice every year—the price tag on Carelessness—is $3,200,000,000.

Automobile accidents run $800,000,000 a year; $550,000,000 literally goes up in flames; home tragedies total $850,000,000. And industry charges off in red—blood red—$1,000,000,000 each year!

From a purely dollars and cents standpoint it is a national problem. And we all know that the grief and suffering which follows cannot be measured or described.

A constant splendid fight is being waged against accidents in America—but the trouble is that only a comparatively few of our citizens are fighting a battle that should be waged by every one of our many millions of people.

Good government guarantees protection to its citizens. That is one of the fundamental purposes of government. Strictly speaking, "protection" in this sense implies protection against external and internal enemies.

But surely it is equally as important to provide safety for our citizens during times of peace. A life is a life, a fatality is a fatality—whether caused in a modern war, in a modern factory, in a street, or in a home.

We are not "waging peace" successfully when 95,000 of our citizens are killed annually in peace times.

The question is frequently asked whether the Government can do something about it. The Government has done much—and is doing much—to prevent accidents to her citizens. Notable contributions to this end are being made by various departments of the Government. We have workmen's compensation laws, factory inspection codes, child-labor laws, regulati s demanding mechanical safety guards and safe ractices in many States. All these things have come about because our Government believes that personal security is just as essential in peace as in war.

The Department of Commerce is contributing to the reduction of accidents in many ways. For instance: Our Steamboat Inspection Service and Navigation Bureau issue regulations to safeguard the lives and well-being of all persons traveling on vessels, both passengers and crew.

The aeronautics branch labors to prevent aviation accidents by charting airways, inspecting aircraft, examining and licensing airmen, and by establishing beacon lights, radio beacons, and similar facilities.

By demonstrating the most approved methods of obviating mine disasters (which have taken a tragic toll) the Bureau of Mines has aroused and strengthened the movement for increased safety and accident-prevention in all industries.

In some of the specific fields where gratifying results have been attained, the Government lacks definite regulatory powers, having no authority to enforce its recommendations calculated to promote safety. Ultimately, we must rely in most cases on the individual.

Reliable safety experts tell us that 98 per cent. of all accidents can be avoided.

Think what it all means! One human being killed by accident every six minutes throughout the year.

Let me speak briefly of the work of the National

Safety Council, under whose auspices—in co-öperation with the National Broadcasting Company—this nation-wide campaign for safety is being conducted.

It is an organization of nearly 6,000 members, voluntarily banded together to wage ceaseless warfare against accident hazards. The splendid humanitarian spirit underlying this movement is best reflected in the fact that the only salaried workers in the entire organizations are the executive staff in the Chicago headquarters.

But we must look the facts squarely in the face.

We must realize that in this entire matter, responsibility is personal. Social and governmental agencies will do their part—but you cannot justly shift the entire burden onto them. Your own viewpoint is most vital—your actions and reactions are most potent factors in the problem.—*U. S. Daily.*

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS, APRIL, 1929

GENERAL PREVALENCE

The total reported disease incidence for April was somewhat lower than expected.

The reported incidence of chickenpox and diphtheria was moderately high.

The reported incidence of pulmonary tuberculosis, lobar pneumonia, typhoid fever, scarlet fever and whooping cough was within endemic limits.

The reported incidence of non-pulmonary tuberculosis, influenza, anterior poliomyelitis, German measles and mumps was low. The reported incidence of measles was very low.

RARE DISEASES

Actinomycosis was reported from Shelburne, 1; total, 1.

Anterior Poliomyelitis was reported from Boston, 2; Somerville, 1; total, 3.

Dysentery was reported from Worcester, 5; total, 5.

Encephalitis lethargica was reported from Boston, 1; Northampton, 1; Worcester, 1; total, 3.

Epidemic cerebrospinal meningitis was reported from Arlington, 1; Boston, 7; Burlington, 1; Chicopee, 2; Fall River, 1; Leominster, 1; Middleboro, 1; Russell, 1; Somerville, 2; Springfield, 2; Westfield, 2; Worcester, 4; total, 25.

Malaria was reported from Chelsea, 1; Malden, 2; total, 3.

Pellagra was reported from New Bedford, 1; total, 1.

Septic sore throat was reported from Boston, 19; Brockton, 1; Danvers, 1; Haverhill, 3; Lynn, 3; Marblehead, 1; Needham, 1; Weston, 1; Winthrop, 1; total, 31.

Smallpox was reported from Boston, 5; Gardner, 1; Taunton, 1; total, 7.

Tetanus was reported from Chicopee, 1; New Bedford, 1; Springfield, 1; Taunton, 1; total, 4.

Trachoma was reported from Boston, 3; Cambridge, 1; total, 4.

Trichinosis was reported from Fall River, 2; total, 2.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES.

	Cases in Entire Population				Case Rates per 100,000 Pop.		
	Apr. 1929	Apr. 1928	Prosodemic Index	Epidemic Index	Apr. 1929	Apr. 1928	Expected Rate***
ALL CAUSES	7679	12431	-	-	175.3	287.4	-
Ant. Poliomyelitis	2	6	11*	.2**	.04	.1	.3
Diphtheria	360	337	246*	1.5**	8.2	7.8	5.6
Measles	1923	6418	5828*	.3**	43.9	148.4	133.0
Pneumonia, Lobar	438	659	498*	.9**	10.0	15.2	11.4
Scarlet Fever	1199	1126	1480*	.8**	27.4	26.0	33.8
Tuberculosis, Pul.	471	431	540*	.9**	10.8	10.0	12.3
Typhoid Fever	18	10	18*	1.0**	.4	.2	.4
Whooping Cough	708	823	1067*	.7**	16.2	19.0	24.4
Chicken Pox	823	646	-	-	18.8	14.9	-
German Measles	148	73	-	-	3.4	1.7	-
Gonorrhea	276	298	-	-	6.3	6.9	-
Influenza	78	82	-	-	1.8	1.9	-
Mumps	445	997	-	-	10.2	23.1	-
Syphilis	116	96	-	-	2.6	2.2	-
Tuberculosis, O.F.	68	79	-	-	1.6	1.8	-

* This Index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

** This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the Boston Medical and Surgical Journal.

*** Calculated from the Prosodemic Index.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1928 AND SEVEN YEAR AVERAGE WEEK ENDING MAY 11

DISEASES	1929					1928			
	Wk. ending Apr. 20	Wk. ending Apr. 27	Wk. ending May 4	Wk. ending May 11	Average cases reported for week corresponding to May 11 for past seven years.	Wk. ending Apr. 21	Wk. ending Apr. 28	Wk. ending May 5	Wk. ending May 12
Anthrax	1	-	-	-	-	-	-	-	-
Cerebrospinal Men.	3	2	-	2	1	-	3	2	1
Chickenpox	65	59	67	61	58	85	68	65	96
Conjunctivitis	-	-	-	-	6	1	8	5	-
Diphtheria	29	21	14	14	28	24	29	23	24
Dysentery Amoebic	-	-	-	-	-	-	-	-	1
Encephalitis Epid.	-	-	-	-	-	1	1	1	2
German Measles	152	155	95	103	23	16	17	18	23
Influenza	18	3	6	7	16	5	17	85	71
Measles	570	484	376	400	254	363	354	370	381
Mumps	102	57	41	74	51	196	210	104	151
Pneumonia (Broncho)*	37	22	18	26	41	60	46	45	62
Pneumonia (Lobar)	30	32	30	33	36	62	59	71	70
Poliomyelitis	-	1	-	-	-	-	-	-	-
Scarlet Fever	57	46	50	59	91	47	77	66	98
Septic Sore Throat	1	2	3	2	1	-	-	-	1
Smallpox	1	3	-	10	4	-	-	5	-
Tetanus	2	-	-	1	-	-	1	-	1
Trachoma	1	-	-	-	-	-	-	-	-
Tuberculosis (Pul.)	36	31	26	42	32	32	34	36	27
Tuberculosis (O.F.)	2	-	1	2	4	13	6	9	7
Typhoid Fever	-	1	2	-	2	1	-	1	2
Whooping Cough	33	23	17	20	65	114	115	113	105
Gonorrhoea	47	15	18	42	21	45	21	37	39
Syphilis	47	21	39	57	25	39	68	36	35

* Made reportable January 1, 1925.

REMARKS: No cases of Asiatic cholera, glanders, plague, rabies in humans and yellow fever during the past seven years.

SECOND GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OF MEDICINE

OCTOBER 7 TO 19, 1929

FUNCTIONAL AND NERVOUS PROBLEMS IN MEDICINE AND SURGERY

Encouraged by the success of the first Annual Graduate Fortnight held last October, the New York Academy of Medicine has arranged for a second Fortnight, to be held October 7 to 19 of this year, and has chosen as the subject "Functional and Nervous Problems in Medicine and Surgery." The field includes those functional disturbances which have been much neglected in the last thirty years in comparison with the structural disturbances of the human body. The topic covers differential diagnosis of functional and organic derangements in all branches of medicine and surgery. It is believed that the subject will attract not only the medical profession generally but also social workers and those interested in public welfare.

SESSIONS IN TEACHING HOSPITALS

In the afternoons nine of the large hospitals of the city, with an abundance of clinical material, will co-öperate in the Fortnight by presenting specially arranged clinical programs bearing upon different phases of the general subject. Besides the special programs which will be presented, over fifty of the teaching hospitals of the city will offer (mornings and afternoons) non-operative clinics and clinical conferences in various clinical specialties, and in mental hygiene subjects such as behavior and habit problems, child guidance, and vocational adjustment.

EVENING SESSIONS AT THE ACADEMY OF MEDICINE

Sessions will be held at the Academy each evening throughout the Fortnight. The titles to be presented in the evening program will cover:

The involuntary nervous system.
Hysteria as a practical problem.
Neuroses following accident.
Post-operative emotional disorders, their prevention and management.
Endocrines and the vegetative system.
General survey of visceral neuroses.
Metabolism and the vegetative nervous system.
Headache and migraine.
The cardiac neuroses.
The vascular neuroses.
Gastro-intestinal neuroses.
The surgery of the vegetative nervous system.
Habit and behavior problems.
Neurocirculatory asthenia.
The functions of the emotions in the production and prognosis of diseases.
Insomnia and disturbances of sleep.
The psychoneuroses.
Psychotherapy.

The list of American and and foreign speakers includes:

Dr. Livingston Farrand, President, Cornell University.

Mr. Clifford Beers, Secretary, The National Committee for Mental Hygiene.

Dr. Ludwig Kast, Professor of Medicine, New York Post-Graduate Medical School.

Dr. Walter Langdon-Brown, Physician, St. Bartholomew's Hospital, London.

Dr. C. Macfie Campbell, Professor of Psychiatry, Harvard University.

Dr. Foster Kennedy, Professor of Neurology, Cornell University.

Dr. Robert B. McGraw, Assistant Physician, Presbyterian Hospital.

Dr. Walter Timme, Attending Physician, Neurological Institute.

Dr. Leopold Lichwitz, Professor Internal Medicine and Chief of Medical Department, Municipal Hospital, Altona, Germany.

Dr. Anton Julius Carlson, Professor of Physiology, University of Chicago.

Dr. Frederick Tilney, Professor of Neurology, Columbia University.

Dr. Robert H. Halsey, Professor of Medicine, New York Post-Graduate Medical School.

Dr. Israel Strauss, Attending Neurologist, Mount Sinai Hospital.

Dr. Burrill B. Crohn, Associate Physician, Mount Sinai Hospital.

Dr. Alfred W. Adson Assistant Professor of Surgery, University of Minnesota.

Dr. Herman Adler, Director, Institute for Juvenile Research, Chicago.

Dr. Marcus A. Rothschild, Associate Physician, Mount Sinai Hospital.

Dr. Charles P. Emerson, Professor of Medicine, Indiana University.

Dr. Carl Potoszky, Director, Children's Clinic, Kaiserin Augusta Victoria Hospital, Berlin.

Dr. Louis Casamajor, Professor of Neurology, Columbia University.

Dr. William A. White, Director, St. Elizabeth's Hospital, Washington.

The profession generally is invited to attend.

No fees will be charged for attendance.

A complete program and registration blanks for special clinics and demonstrations will be mailed on request.

HIGHER PREVALENCE FOR SCARLET FEVER

SPINAL MENINGITIS AND TYPHOID FEVER FOUND TO BE MORE WIDESPREAD BY HEALTH SERVICE

Spinal meningitis, scarlet fever and typhoid fever continue to be more prevalent this year as compared with last, according to the weekly review on the prevalence of communicable diseases made public May 11 by the Public Health Service. The review relates to prevalence for the week ended April 20 of this year as compared with the same week of 1928.—*U. S. Daily.*

The Massachusetts Medical Society

148th
Anniversary
June 10, 11, 12, 1929
Copley Plaza Hotel

For details see JOURNAL of
May 30

For information about arrangements
write Dr. James Hitchcock
126 Massachusetts Avenue, Boston

CORRESPONDENCE

AN OPENING FOR A PHYSICIAN

Massachusetts College of Pharmacy
Longwood Avenue, Boston

May 16, 1929.

NEW ENGLAND JOURNAL OF MEDICINE:

A druggist in Meriden, Connecticut, has written, sating that he believes there is a good opening in his town for a physician, specializing on eye, ear, nose and throat. Anyone who would be interested in this, may communicate with Mr. Stanley B. Pinks, 41 Colony Street, Meriden, Connecticut.

Very truly yours,
T. J. BRADLEY, *Dean.*

AN ACKNOWLEDGMENT OF THE WORK OF A GROUP OF PHYSICIANS

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

May 20, 1929.

Editor, NEW ENGLAND JOURNAL OF MEDICINE:

I would like to apologize to those physicians who advised with the Department of Public Health over the preparation of the "Minimum Standards for the Diagnosis, Treatment and Control of Syphilis," for the appearance of my name as its author in the issue

of May 16th of the NEW ENGLAND JOURNAL OF MEDICINE. It was through a misunderstanding that it so appeared. While it was my privilege to gather the material together, it was only through the willingness of the group of physicians, to whom acknowledgment was made, to contribute a great deal of time and much advice that the paper finally took form. It was intended that it should appear as a publication of the State Department of Public Health in coöperation with the medical profession and not as a contribution of an individual. I cannot presume, either as a physician or as a public health official, to the experience which would entitle me to credit for the vast amount of valuable material contained in the paper. Very truly yours,

N. A. NELSON, M.D.,
Epidemiologist,
In Charge of Venereal Disease Control.

NEWS ITEMS

HARVARD MEDICAL ADDS THIRTY-SIX TO STAFF — WILL BE ENGAGED IN TEACHING AND RESEARCH—The appointment of thirty-six men to the teaching and research staff of the Harvard Medical School, including four men who have also been appointed to the staff of the Huntington Memorial Hospital, was announced May 21 by the administrative offices of Harvard University. In addition it was announced that Dr. Channing C. Simmons has been chosen to serve as acting surgeon-in-chief of the Huntington Memorial Hospital for a period of three years.

The list of new appointments to the Medical School staff is as follows:

Huntington Memorial Hospital—William T. Salter, Douglas R. Drury, Ovid O. Meyer, William H. Lewis, Jr.

Assistants—John F. Enders, John L. Jacobs, Eliot F. Porter, Stacy R. Mettier, Laurence B. Ellis, Clark W. Heath, Frank W. Marlow, Jr., Nathan Sidel, Wheelan D. Sutliff, Fred Gibbs, Hiram H. Merritt, Jr., Arthur B. Donovan, Leon E. White, William H. Lewis, Jr., George K. Mallory, Henry E. Gallup, Edward S. Goodwin, Harold D. Pyle, and Horatio Rogers.

Instructors—Junius M. Rawlings, Ernest M. Daland.

Research Fellows—Harold A. Abramson, Richard T. Beebe, Douglas R. Drury, Jacob Lerman, George W. Lewis, Arthur A. Marlow, Ovid O. Meyer, William T. Salter.

Teaching Fellows—George H. Hitchings, Marshall N. Fulton, Elbert L. Persons, Frederick Kellogg, Chester W. Hampel, Wesley T. Pommerenke.

Henry Pickering Walcott Fellow—Fuller Albright. —*Boston Herald.*

THE DUGDALE CASE DECISION—The Supreme Court has upheld the action of the Board of Registration in Medicine in revoking the certificate of Dr. Frederick Dugdale.

REPORTS AND NOTICES OF MEETINGS

REPORT ON THE NEW ENGLAND HEALTH INSTITUTE AT HARTFORD, CONNECTICUT

Eleven hundred and seventy-eight persons formally registered as students in the New England Health Institute held at Hartford, Connecticut, from April 22 to 26 inclusive.

The five day course of lectures was held under the auspices of the State Departments of Public Health of Maine, New Hampshire, Vermont, Massachusetts and Connecticut and the following co-öperating bodies: United States Public Health Service, Yale Medical School, Harvard Medical School, Massachusetts Institute of Technology, Simmons College and the New England Conference on Tuberculosis.

Dr. Stanley H. Osborn, State Commissioner of Public Health of Connecticut, was in general charge of the affair and chiefly responsible for its extraordinary success. In addition to the number who registered there were many who came and attended individual lectures or the sessions of one day during the Institute without registering so that a conservative estimate of the total attendance during the week would be in the neighborhood of sixteen hundred.

Among the important lectures given in the Course on Monday, April 22, and Tuesday, April 23, were: "A Workable Program for Measles Control" by Dr. Edward S. Godfrey, Jr., Director of the Division of Communicable Diseases, New York State Department of Health; "Education of Child with Mental Handicaps" by Dr. Arnold Gesell, Professor of Child Hygiene and Director of Yale Psycho-Clinic, New Haven, Connecticut; "Appetite Loss in Infancy and Childhood" by Dr. Joseph Garland, Boston; "The Appraisal Form — Its Application to City Health Work" by Dr. W. F. Walker of the American Public Health Association; "The Important Causes of Infant Mortality" by Dr. Richard M. Smith of the Harvard School of Public Health; and "The Typhus Fever Problem in New England" by Dr. Kenneth F. Maxcy, Past Assistant Surgeon of the United States Public Health Service.

At the banquet on Tuesday evening at Hotel Bond where the Institute was held there were present four hundred and eleven persons in addition to the speakers and guests of honor. The particular star of the dinner was Dr. George E. Vincent, President of the Rockefeller Institute, who in his inimitable way and with prodigious memory and extraordinary assembling of facts gave an epitome of health work the world over. Dr. Stanley H. Osborn, Health Commissioner of Connecticut, was an admirable toast master and presented the speakers to the four hundred odd guests assembled in well chosen terms, not absolutely serious, but provoking here and there a ripple of laughter.

Two gentlemen from foreign shores, Dr. W. W. Jameson, Head of the London School of Public Health, and Dr. K. W. Weffring, Director of Public Health in Norway, voiced their appreciation of things American, the first-named giving full measure of praise to Dr. Osborn as the reason for success in Connecticut. Dr. Hugh S. Cumming, Surgeon General of the United States Public Health Service, in a scholarly address urged that full measure of legal and financial support be given Dr. Osborn in his well studied measures for the health of the people.

For home talent Hon. John H. Trumbull, Governor of Connecticut, and Dr. Edward K. Root, Secretary of the Connecticut Public Health Council, presented different aspects of the public health movement. The Governor spoke especially of industrial work

and the efforts that are underway to improve health conditions in industrial establishments, notably now, in the line of preventive medicine. Dr. Root, a member of the State Board of Health for some thirty years, presented a history of progress from the establishment of the Board in 1878 to the present time.

Dr. Vincent, as usual was in rapid-fire trim. He spoke especially to the idea that we in America should remember that good as may be our work it is not the only health work in the world and illustrated his point by a review of what the different countries, Oriental as well as European, are doing. "Even in China", said Dr. Vincent, "where wars come and go like the weather there is steady progress in public health." One interesting phase of the story was that Denmark, which has the minimum record for infant mortality, has an excellently trained mid-wife in every community. "In England, where public health is a career and where the practitioner does not care who is elected to Parliament, the health work is excellent. In many countries where health insurance has been established, preventive medicine has followed to avoid failure on the part of the insurer."

At a Wednesday morning session of the group in industrial hygiene Professor J. W. Barker of Massachusetts Institute of Technology spoke on "Illumination in Industry". Illumination is very important because it affects the health of the employee and has close relationships to amount and quality of product. The speaker outlined the results of many series of investigations, some as research work and others in the definite attack on manufacturers' problems. The important factors in lighting are amount, intensity, distribution and color. Much of the story hinged about glares which are very disturbing. The relationships of the light factors to the employees are both physical and psychological and as an example of the latter there was quite a discussion of violet light. This, while most admirable for mechanical purposes, is depressing to the individual and has certain features, "turning lipstick black" being one of them, which unsettle the mind and affect the product. Many examples of disturbance for one reason or another were given. A perfectly lighted room with walls tinted just off the white and shiny proved to be unfortunate because the eye of the operative struck always the same color and intensity. A wainscot-height painting with green removed the disagreeable effects. In another case lint on the floor from a loom proved to be an optical obstacle and a screen was used. Screens seem to have been employed very often in removing intensities of light distribution, reflections and glares. Professor Barker called attention to the necessity of well-lighted passages and stairways, noting that while there are state standards with reference to candle power required there the stepping from a room brightly lighted for manufacturing needs to the comparatively dim hall or stairs is a source of not infrequent accident. Underlying the whole matter of proper illumination is the necessity of convincing the manufacturer that proper illumination means dollars and cents to him.

Dr. Leonard Greenburg, Associate Sanitary Engineer of the United States Public Health Service, spoke with reference to ventilation as a factor towards the prevention of occupational diseases. Dr. Greenburg, who is well known for investigations made by him in the laboratories at Yale University, spoke more especially on the dust diseases, quoting results of investigations among the granite quarries at Quincy, Massachusetts, and the marble works at Barre, Vermont. The investigations which were outlined in this paper were in two directions, one to determine the value of masks, dust suction apparatus and other devices in the prevention of disease, and the other the standards of dust particles in the air which may be inhaled without injury to the workman, with definite results reached in both sections of the work.

Dr. Allan W. Freeman, Professor of Public Health Administration of the School of Hygiene and Public Health of Johns Hopkins Uuniversity, spoke on "The Health Budget and Its Apportionment". Dr. Freeman presented the results of studies of the distribution of the health budgets of the Cities of Baltimore, Maryland, Richmond, Virginia, and the combined Health Districts of LaSalle, Peru and Oglesby, Illinois. He also referred to the analysis of the distribution of municipal health moneys made by the American Public Health Association in its survey of one hundred cities in 1923.

Dr. Freeman's deduction from his comparisons led to the conclusion that of the total annual municipal appropriations in the localities studied the following are the proportions of the budgetary allotments in cents per capita: For administration—5.7; for Vital Statistics—1.2; for Communicable Disease Control—7.5 to 8.5; Tuberculosis Field Service—7.5; Tuberculosis Hospital Service—35 to 55; Venereal Disease—3 to 5; Infant Welfare—.15; Laboratory—4 to 5; Food and Milk—7. For those services which are grouped under the heading of "Maternal Services" the cities are spending somewhere between $5,000 and $10,000 per annum.

Dr. Freeman further reported the following as maximum figures in cents per capita of any city in the country from a study made in 1923:

Item:	Maximun Any City 1923
Administration	25.8
Vital Statistics	6.9
Communicable disease	21.6
Tuberculosis	23.9
Venereal disease	11.5
Maternity and infancy	30.9
School	40.3
Laboratory	10.9
Food and milk	24.0
Sanitary	24.2
Total	220.0

Dr. Milton J. Rosenau, Professor of Preventive Medicine and Hygiene of the Harvard School of Public Health, spoke on "Influenza." His lecture drew one of the largest audiences in the entire week of the Institute. Dr. Rosenau described the epidemiological studies made in connection with the pandemic of 1918-1919. He described influenza as no respecter of persons, taking alike the strong and weak, rich and poor, young and old and people of all nationalities. The disease itself has a quick onset, is highly communicable and resembles pneumonia in its sharp progress to crisis and subsidence. The course of the disease itself after onset is three days.

The disease itself is not believed to be the cause of death—it is the pneumonia or other grave sequellae that result fatally. Despite efforts extending over a period of forty years of study of the disease little is known about it except that its spread can be prevented through absolute isolation.

Dr. George H. Bigelow, State Commissioner of Public Health of Massachusetts, described the State Cancer Program which has been carried on by Massachusetts. The Cancer Campaign has consisted of the following main features:

Pondville Hospital, Norfolk County, at which 753 patients were treated in the fiscal year ending November 30, 1928, and for which there is now a waiting list. About two-thirds of the patients left the Hospital benefited but in all instances to remain under periodic observation. The Out-Patient Service has grown so that an average of thirty patients are seen weekly. Two District Medical Societies held their meetings at the Hospital during the year. The Visiting Staff, comprising some of the leading cancer men in Massachusetts, has given over 150 hours monthly.

Seventeen cities and towns in the Commonwealth are now conducting State-aided Cancer Clinics. It is expected that two additional ones will be added this year. The Clinics served in the last fiscal year 2,542 persons, of whom 728 had cancer.

For the education of the public a five-day Campaign was conducted last Spring in co-öperation with the State Medical Society and the Massachusetts Branch of the American Society for the Control of Cancer which included meetings for the public and the profession, clinics, broadcasts, newspaper articles and a special cancer number of the NEW ENGLAND JOURNAL OF MEDICINE. The Campaign culminated in a public meeting held at Symphony Hall which was addressed by His Excellency, the Governor of the Commonwealth, and a number of other noted speakers.

Dr. James A. Tobey, formerly Editor of the Public Health Law Section of the *American Public Health Journal* and now Director of Health Service of the Borden Company, New York, spoke on "Points to Consider in Preparing Public Health Legislation". Dr. Tobey warned against the danger of endeavoring to secure through legislative enactment results which can better be secured through the education of the people. He described the essential points of a legislative measure and recommended that proposed legislation should be submitted to competent legal advisers for analysis with respect to its constitutionality and phraseology to accomplish the desired results before it is presented for consideration by a legislative body. He explained that in some States of the Union the legislative branches have designated to the Public Health Councils power of enacting legal regulations regarding health matters which have the full force of law.

Perhaps the most interesting single item considered at the Institute was the matter of Calmette's B. C. G. immunization of infants against tuberculosis.

Dr. Stephen J. Maher, Chairman of the Connecticut State Tuberculosis Commission, presented an article by Calmette which he, Dr. Maher, had translated. It was a comprehensive presentation of the history of the project and an account of the results in countries of Europe from the inception of the experiment to the present time.

Following Dr. Maher's paper Dr. S. A. Petroff, Director of the Trudeau Research and Clinical Laboratory, Saranac Lake, New York, controverted Calmette's claims by a presentation of a long series of experiments made at the Trudeau Laboratory on animals in which the attenuated strain of bacilli developed by Calmette himself and sent to this country for experimental purposes were found to redevelop virility similar to that of the original bacilli. Dr. Petroff's paper on this subject which he presented at the Annual Meeting of the Massachusetts Tuberculosis League on Monday, April 22, at the University Club will appear in an early issue of this JOURNAL.

Dr. William H. Park, Director of the Bureau of Laboratories, New York City Department of Health, and Professor of Bacteriology and Hygiene in University and Bellevue Hospital Medical College, gave an account of the experiment which has been conducted in New York City in the use of the B. C. G. Vaccine.

Dr. Camille Kerezturi, Research Worker of the New York City Department of Health, who has for two years been in actual charge of the immunization work, described the technique of the immunization, the selection of the children, the local of the neighborhoods, the system of controls and the findings as a result of the administration of the vaccine to 198 infants. Dr. Kerezturi made out a strong case for the validity of the claims of Dr. Calmette.

Dr. Edward O. Otis, Honorary President of the Massachusetts Tuberculosis League and Professor of Pulmonary Diseases and Climatology of Tufts College Medical School, gave a résumé of the controversy about the Calmette method of immunization in which he gave his opinion as a judge after hearing the arguments that with a carefully and well-developed plan he would favor the continuation of experiments with B. C. G. until it was demonstrated conclusively one way or the other as to whether the claims of Calmette are valid.

The Executive Committee of the Institute at its Annual Meeting decided to continue the Institute.

The 1930 Institute will be held at Boston, Massachusetts, with Dr. George H. Bigelow, State Commissioner of Public Health, as Director. It is probable that the meetings will be held during the first fortnight of April.

CLINICAL STAFF MEETING AT THE MASSACHUSETTS GENERAL HOSPITAL

A clinical staff meeting was held at the Massachusetts General Hospital on Thursday evening, May 2.

The meeting was opened by a demonstration of cases. Dr. John Fay of the East Medical Service showed a patient with Addison's disease who also had evidence of Raynaud's Disease; the vasco-motor aspects were discussed by Dr. J. C. White, who spoke of the new surgical methods of treating these changes. The next case, demonstrated by Dr. Walter Bauer of the Medical Service, was an example of Paget's Disease in which the changes were limited to one bone,—the tibia; Dr. Bauer discussed the metabolic aspects of the disease, particularly the disturbance in the calcium and magnesium ratio. The third case, demonstrated by Dr. T. H. Coolidge, of the West Medical Service, was of idiopathic epilepsy showing an unusually low blood pressure.

Following the demonstration of cases, Dr. Nathaniel Allison and Dr. R. K. Ghormley presented the results of a clinical-pathological study of the various

forms of arthritis, their report being based on a study of 289 cases. Dr. Ghormley first described the changes occurring in the various forms of arthritis where the etiology is known. He grouped the cases according to their origin,—traumatic, pyogenic or tubercular,—and discussed the typical changes that occur in each. Dr. Allison, in continuing the talk, discussed the cases of arthritis where the etiology is not known. He followed the classification of Nichols and Richardson, and grouped these cases into the proliferative and degenerative groups. In the former group the chief lesion is in the synovial membrane, where characteristic collections of lymphocytes are found. These are very typical, and on superficial examination suggest tuberculosis. Dr. Allison said that the pathological picture definitely suggested an infectious agent but that Dr. Zinsser had been unable to culture organisms from the specimens sent him. On the basis of these negative findings, Dr. Zinsser was inclined to regard such cases as anaphylactic phenomena. Dr. Allison pointed out that in the degenerative type the picture was quite different, the typical findings here being degeneration and atrophy. He emphasized the importance of routine careful analyses of the tissues from each case and stressed the importance of fresh tissue for this study.

Both Dr. Allison's and Dr. Ghormley's talks were illustrated by numerous lantern slides and photomicrographs.

THE ANNUAL MEETING OF THE MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

This meeting was held at the U. S. Veterans Hospital in Bedford, May 15, 1929.

Following a luncheon served at 1 o'clock in the officers' dining room, a business meeting was held in the auditorium with Dr. John H. Lambert presiding. Reports were heard from Dr. T. A. Stamas, secretary, and Dr. Mason D. Bryant, treasurer, which showed that the society was in good condition. The nominating committee then submitted a list of new officers for the coming year and the following were elected unanimously: Dr. Arthur G. Scoboria, president; Dr. J. A. Mehan, vice-president; Dr. Mason D. Bryant, treasurer; Dr. T. A. Stamas, secretary; Dr. P. J. Meehan, librarian; Dr. Howard W. Jewett, commissioner of trials. District nominating committee: Dr. John H. Lambert, principal, and Dr. J. E. Lamoureux, alternate. Censors: Dr. J. A. Gage, supervisor; Dr. W. F. Ryan, Dr. D. J. Ellison, Dr. G. O. Lavallee, Dr. J. J. Cassidy. Councillors: Dr. J. E. Lamoureux, Dr. J. A. Gage, Dr. G. A. Leahey, Dr. J. H. Lambert, Dr. G. F. Martin, Dr. M. L. Alling. The election of officers was followed by a discussion of matters relating to the business of the society.

A resolution on the death of Dr. Edward J. Clark, former superintendent of the Lowell Corporation hospital, was read by Dr. J. E. Lamoureux. It was voted to have the resolution filed as part of the records of the society, and to send a copy to the family of Dr. Clark.

Dr. Nelson of the state department of public health delivered an address. A clinic was conducted for the visiting physicians by members of the hospital staff at which five groups representing five major classifications of cases were presented. The doctor in charge of each demonstration gave a case history in each instance and showed the manner in which the patient exhibited symptoms of his difficulty.

Upon the conclusion of the clinic, the visitors were taken on a tour of the institution that they might have an opportunity to see the modern equipment which is in use and learn something of the methods employed in the cases receiving care at the institution.

PLYMOUTH DISTRICT MEDICAL SOCIETY

The regular meeting of the Plymouth District Medical Society was held in Grand Army Hall, Abington, Mass., May 16, 1929.

The meeting was very enjoyable and one long to be remembered.

Two of Massachusetts' foremost medical men, Dr. William H. Robey, clinical professor of medicine at Harvard Medical College, and Dr. George Gilbert Smith, urologist of the Massachusetts General Hospital and Palmer Memorial Hospital, Boston, addressed the Society.

Introducing Dr. William H. Robey, Dr. Thomas H. McCarthy, president of the Society, stated that he thought the Plymouth District was very fortunate in having a noted physician, like William H. Robey, as its distinguished guest. Dr. Robey addressed the Society on "Coronary Artery Diseases." It was an exceptionally fine effort by Dr. Robey.

Introducing Dr. George Gilbert Smith, Dr. McCarthy stated that he had Dr. Smith's book on "Genito-Urinary Diseases" on his desk and that was one of the finest books in his collection and that he was very happy to introduce a man of Dr. Smith's reputation and experience to the physicians of Plymouth County. Dr. Smith read a paper entitled "Symptoms and the Causation in Urological Cases." Illustrations by numerous lantern slides were very instructive and entertaining additions to the address.

Before introducing the two speakers, a short business meeting was held.

Dr. McCarthy read a letter, received from Dr. Chevalier Jackson, the noted eye, ear, nose and throat specialist of Philadelphia. He is one of the greatest bronchoscopists in the world today. Dr. McCarthy stated that when Dr. Jackson appears before the Plymouth District Medical Society, at some date selected in October, he intends to make it a big meeting. An invitation will be extended to all physicians and surgeons who are members of the Massachusetts Medical Society to attend this meeting that is to be addressed by this wonderful nose and throat surgeon. It will be his only appearance in Massachusetts. Dr. McCarthy stated that he thought the Plymouth District Society was very fortunate in having a distinguished surgeon such as Dr. Chevalier Jackson as its guest speaker.

President McCarthy was instructed to invite, through the Council of the parent body, the Massachusetts Medical Society to hold its annual meeting at Plymouth in 1930, preliminary steps already having been taken.

It was voted that the secretary send a telegram of condolence to Dr. George W. Crile, head of the Cleveland Clinic, where more than 100 lives were snuffed out Wednesday in an explosion. Dr. Crile was the guest-speaker of the Society at its meeting last October.

Dr. McCarthy read two letters from Dr. George H. Bigelow of the State Board of Health, who proposed to send members of his staff to Brockton, for the purpose of making a public health survey, to classify chronic diseases. All of the chronic cases of Brock-

ton and vicinity will be called to the Board of Health Department, before Dr. Bigelow's staff of State Board of Health physicians. They will interview these residents, to ascertain the cause of their unhealthy condition and classify them.

Dr. Charles G. Miles, as chairman of the committee on clinics, gave his report in regard to conditions in the various clinics in the district up to the present time.

There were forty physicians and surgeons present at this meeting.

The interest in the Plymouth District Medical Society at the present time is of a high order. Everyone is taking a keen interest in the Society's affairs, which is a healthy sign.

An excellent turkey dinner was served by the women of the W. R. C. of Abington.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The Essex South District Medical Society held its annual meeting and dinner at the Tavern, Gloucester, on Tuesday, May 14, 1929.

Reports of the secretary, treasurer and auditing committee were read and approved.

The annual election of officers was held, resulting as follows:

President: Dr. T. J. Jenkins, Topsfield.
Vice-President: Dr. H. P. Bennett, Swampscott.
Secretary: Dr. R. E. Stone, Beverly.
Treasurer: Dr. Andrew Nichols, 3d, Danvers.
Librarian: Dr. C. M. Cobb, Lynn.
Commissioner of Trials: Dr. J. E. Simpson, Salem.
Censors: Dr. J. F. Jordan (Supervisor), Peabody; Dr. R. W. Haywood, Salem; Dr. A. E. Parkhurst, Beverly; Dr. N. P. Breed, Lynn; Dr. Hanford Carvel, Gloucester.

Councilors: Dr. J. Armand Bedard, Lynn; Dr. J. F. Jordan, Peabody; Dr. L. C. Swan, Beverly; Dr. A. N. Sargent, Salem; Dr. J. W. Trask, Lynn; Dr. E. B. Hallet, Gloucester; Dr. C. H. Phillips, Beverly; Dr. W. G. Phippen, Salem; Dr. J. F. Donaldson, Salem; Dr. W. T. Hopkins, Lynn; Dr. F. W. Baldwin, Danvers; Dr. O. S. Pettingill, Middleton; Dr. C. L. Curtis, Salem.

Executive Committee: Dr. C. H. Hogan, Salem; Dr. I. B. Hull, Gloucester; Dr. C. L. Hoitt, Lynn; Dr. G. K. Fenn, Beverly; Dr. E. D. Reynolds, Danvers; Dr. C. A. Bonner, Hathorne.

Nominating Councilor: Dr. O. S. Pettingill, Middleton.

Alternate Nominating: Dr. W. T. Hopkins, Lynn.

The following, Dr. T. L. Jenkins, Dr. R. E. Stone, Dr. P. P. Johnson, by reason of their office are also Councilors.

At the close of the business meeting the society was entertained by an address, with lantern slide illustrations, by Dr. O. F. Carr of Beverly, who spoke upon "A Trip Around the World."

Ladies were invited and the meeting was followed by dancing.

Attendance 104. Adjourned 10.15 p. m.

WM. T. HOPKINS, *Reporter.*

THE BOSTON DISPENSARY

25 Bennet Street

To Members of the Clinical Staff:

A meeting of the Clinical Staff of the Boston Dispensary will be held on Tuesday, May 28, in the Children's Medical Department, at 12:00 noon.

Immediately after luncheon, Dr. George R. Minot, Director of the Thorndike Laboratory at the Boston City Hospital, will address the staff on the subject: "Treatment of Anaemia."

Speaking promptly at 12:30.

Luncheon to guests, 25c.

AUGUSTUS RILEY, M.D., *President.*
JOSEPH J. SKIRBALL, M.D., *Secretary.*

STAFF MEETING OF THE MASSACHUSETTS HOMOEOPATHIC HOSPITAL

The regular monthly meeting of the Staff of the Massachusetts Homoeopathic Hospital will be held in the Evans Memorial on Friday, May 31, 1929.

PROGRAM

(1) Analysis of Service for the month of April, 1929.

(2) Necropsy Report for the month of April, 1929.

(3) "A Study of 900 Abdominal Sections in the Maternity Department"—Dr. Morris Courtiss.

(4) "Report on the Work of the Gynaecological Service"—Dr. S. R. Meaker.

(5) "Report from several hundred Laparo-Trachelorrhaphies (Low Caesarean)"—Dr. Edwin W. Smith.

(6) "Report on a Study of the Uterine Index"—Miss Mary O'Sullivan.

(7) "Report of a New Method of Early Diagnosis of Pregnancy"—Dr. Max Davis.

(8) "Report on a Study of the Female Sex Hormone"—Dr. James C. Janney.

(9) Clinical Case Reports if time permits.

(10) At the conclusion of the program, staff members are cordially invited to announce new activities in their respective services, and to introduce, for brief discussion, any topics of general interest.

Meeting will be called to order promptly at 8 P. M.

Refreshments will be served at 10 P. M.

Physicians, medical students and nurses cordially invited.

For the Committee on Staff Meetings,

SAMUEL N. VOSE, M.D., *Secretary.*

The Massachusetts Medical Society

148th
Anniversary
June 10, 11, 12, 1929
Copley Plaza Hotel

For details see JOURNAL of
May 30

For information about arrangements
write Dr. James Hitchcock
126 Massachusetts Avenue, Boston

SOCIETY MEETINGS

May 28—The Boston Dispensary Clinical Staff Meeting. Detailed notice appears elsewhere on this page.

May 29—The New England Section of the American Academy of Physiotherapy. Complete notice appears on page 1063, issue of May 16.

May 31—Staff Meeting of the Massachusetts Homoeopathic Hospital. Detailed notice appears above.

June 13—International Hospital Congress. Complete notice appears on page 212, issue of January 24.

July 8-9—American Association for the Study of Allergy Complete notice appears on page 906, issue of April 25.

July 9—American Heart Association. Scientific Meeting from 2 to 6 P. M. in the Auditorium of the Woman's Club, 448 Taylor Street, between 12th and 13th Streets, Portland, Oregon.

October 7-19—New York Academy of Medicine. Detailed notice appears on page 468, issue of February 28.

BOOK REVIEWS

International Clinics. J. B. Lippincott Company. Philadelphia and London. Volume 1. Thirty-Ninth Series, 1929.

This volume contains an interesting collection of articles on diverse subjects. Bacteriophagy is reviewed by the pioneer in this field, d'Herelle, whose masterly presentation and unbounded enthusiasm makes one feel that we are on the threshold of a new era in the therapeusis of bacterial infections. The present status of Pellagra is discussed by Roberts. Another recently developed field is that of biomicroscopy, and ophthalmologists owe a great deal to the slit lamp as Harvey Thorpe ably demonstrates.

Hyperlipochromia (Carotinaemia: Xanthosis Cutis) is an uncommon condition which Hugh Stannus describes in detail with a complete review of the literature. There is also a review of pernicious anemia by Held and Goldbloom bringing the subject up to date. The reviewer takes issue with these authors who advocate the name Addison-Biermer's Anemia. Granted that we can no longer regard the disease as "pernicious" some simple name as "primary" would be preferable. Dr. Ashhurst offers a well illustrated article on the surgery of the blood vascular system with particular reference to the various aneurysms and their treatment.

Aside from these highlights there are many other articles worthy of perusal. In an article on poliomyelitis Flexner takes positive exception to Rosenau's work in stating that "thus far it has not been found possible to produce an immune serum in any animal other than the monkey. Since the virus of poliomyelitis is distinct from streptococcus, it seems quite empirical and futile to employ antisteptococcus serum for specific therapeutic purposes." Professor Jellinck points out the valuable lumbar puncture following electric accidents. Coupal's article on the "Progress of Medicine in 1928" is too broad an undertaking to be of great value.

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*Oxford Monographs on Diagnosis and Treatment.** Edited by HENRY A. CHRISTIAN, M.D., Sc.D., LL.D. New York, Oxford University Press, 1928. $100 for the set of ten volumes; not sold separately.

Volume I. The Diagnosis and Treatment of Disorders of Metabolism, by James S. McLester, M.D. pp.vi+328.

Volume II. The Diagnosis and Treatment of Diseases of the Stomach and Intestines, by William Fitch Cheney, B.L., M.D. pp.vi+280.

Volume III. The Diagnosis and Treatment of Diseases of the Heart, by Henry A. Christian, M.D., Sc.D., LL.D. pp.vi+355.

Volume IV. The Diagnosis and Treatment of Diseases of the Thyroid, by James H. Means, M.D., and and Edward P. Richardson, M.D. pp.vi+366.

*In last week's issue the notice referring to volumes under "Books Received for Review" contained certain inaccuracies which have been corrected in this item.

These volumes, published in loose-leaf form, present to the practitioners of today the modern methods of diagnosis and treatment of a group of diseases affecting a single organ or system of the body. As the editor points out in the preface, "in the modern era of medicine very striking advances have been made in methods of diagnosis" and "treatment in all of its forms occupies possibly a larger place in medical literature than any other phase of medicine." The authors of these volumes, all men with outstanding qualifications in their fields, have tried to select what was best from the newer researches and present them in a clear way so as to be of practical help in the problems of practice. If we assume that the books were written for the *average* general practitioner, away from the large city hospitals and laboratories, let us see how these books ought to appeal to him. As the general standard of all four volumes is very high, we may take volume III as a test.

In the first place, the book is difficult to read as it is too heavy to hold easily and it will *not* stay open on the desk. The index is good, exceptionally so. The text is adequate for each disease of the heart and eminently practical. Under "Rest in the Treatment of Decompensation" one finds, "Nurses are very prone in the morning hours to fatigue patients by crowding breakfast, bowel movement, bed bath, changing sheets and tidying up the room into too short a space." This may not be the latest word in treatment, but it is good advice, too seldom given, and it has a distinct place in a book of this sort. The chapters on digitalis therapy and the cardiac neurosis are unusually good. In the latter chapter one finds the statement that "more patients who think they have heart disease seek the physician's advice than those who actually have heart disease. To treat them satisfactorily often is far more difficult than to obtain good results in the treatment of patients with organic heart disease." No book known to the reviewer covers the subject so well from the point of view of the general practitioner. We only wish the book was a little more easy to handle and one-half the price.

The other volumes have the same standards and the whole work can be most highly recommended.

Foie-Voies Billiares. Vol. 16, Nouveau Traité de Medecine, under the editorship of G. H. ROGER, F. WIDAL and P. J. TISSIER. Price 125 fr.

This monograph on the diseases of the liver is an extensive piece of work, containing 148 pages with 165 figures and 20 plates, 11 of which are in color. The chapters composing the volume are contributed by 11 different authors, the larger part being written by M. Villaret, L. Justin-Besançon, F. Widal, P. Abrami, M. Garnier and J. Cathala.

The first portion of the book is devoted to the different methods of examining the liver, including roentgenology. There are short discussions of the different functions of the liver. The next section describes the various clinical syndromes associated with liver diseases, considerable amount of space being devoted to hypertension of the portal system. This is followed by an exhaustive treatise on jaundice. The different types of congestions and sclerosis of the liver are then discussed. The fifth section of the book takes up systematically the various diseases of the liver, among which might be mentioned tuberculosis, syphilis, neoplasms, echynoccocus diseases, and so forth. This is followed by a section devoted chiefly to diseases of the bile ducts and including a study of cholelythiasis.

Although the book is lengthy, owing to the large amount of ground covered, the articles on the different topics are concise and well writen. It gives one a very comprehensive picture of liver diseases, representing the best teaching of the French school. The viewpoint and emphasis are of the morphological pathology, but perhaps that is inevitable in the present state of our knowledge in regard to the manifold functions of the liver.

Principles of Pathology. By H. D. Power, M.D., and W. W. Hala, M.D., D. Appleton and Company, New York, 1929. P. 787.

Good textbooks of pathology are sufficiently numerous to warrant unusually close scrutiny of any new textbook purporting to cover this field. The illustrations are always one of the most essential parts of any volume dealing with pathology. Although the subject matter of the illustrations in this book is of interest and value, by and large the illustrations themselves are technically poor and some of them would leave even a trained pathologist in doubt as to the type of lesion represented. Thus, one finds in several instances photographs with portions of the specimens projecting above the surface of the fluid in the jars, and in one instance apparently projecting above the level of the jar itself, or even the numbers upside down on the rule included in the photograph to show the scale. It is bad enough to attempt to examine a specimen in a round jar but to present to students photographs of specimens in round jars with the resultant poor lighting and distortion is a waste of time and effort. Among the best illustrations are those prepared by the dichrome process of the senior author. After looking over the illustrations the reviewer was somewhat startled to find a section on page 719 entitled "The Technic of Photographing Gross Specimens."

The subject matter is handled conventionally. At times the phraseology is a little grating, as for example on page 274 we read "The X-ray makes the diagnosis."

General Surgery. The Practical Medicine Series, comprising eight volumes on the year's progress in medicine and surgery. Edited by Evarts A. Graham, A.B., M.D. Series 1928. Published by The Year Book Publishers. Pp. 758.

This is a book of about 760 small pages, good type with very many excellent illustrations. It is full of the recent advances made in surgery with definite references as to original articles. Many cases are cited in detail which of course adds to the interest. Those doing general surgery and those men who are doing general practice and who want to keep in touch with surgery, would do well to read this book, for it does give in an easily understood way the most recent advances in surgical technique.

The reviewer found of particular interest the pages on the gall-bladder and bile ducts but another would find of equal interest what is related on fractures, anesthesia, surgery of the chest or orthopedics, for practically everything in the general surgery field receives some attention in this volume.

The Infant and Young Child. By John Lovett Morse, M.D., Edwin T. Wyman, M.D., and Lewis Webb Hill, M.D. W. B. Saunders Company, Philadelphia and London. Price $2.00.

This manual for mothers, first published in 1923, is now revised and reprinted, remaining, however, the conservative book of its type. It is rather longer and goes into rather greater detail than most books for mothers, which increases its value as a guide and handy reference work.

Pediatrics for the General Practitioner. By Harry Monroe McClanahan, A.M., M.D., Professor of Pediatrics Emeritus, University of Nebraska, etc. J. B. Lippincott Company, Philadelphia and London. Price $6.00.

This volume, while purporting to be a text-book of pediatrics for the general practitioner, is in reality a valuable reference work for the pediatrician as well; it is as complete and as good a treatise on general pediatrics as has come to this reviewer's hand for some time. As the author says in his preface, he has eliminated any extended detailed discussion of pathology on the history of disease and has written a book which represents largely his personal medical advice culled from a goodly number of years of practice, first as a general practitioner and later as a child specialist. It is this type of information which the practicing pediatrician as well as the general practitioner needs and is looking for.